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SERIES C—No. 3

HEALTH STATISTICS

FROM THE U.S. NATIONAL HEALTH SURVEY

The Hawaii Health Survey
description and selected results

Oahu, Hawaii
October 1958 - September 1959

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE



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for catalog card.

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The Hawaii Health Survey

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Oahu, Hawaii

October 1958 - September 1959

The design, content, definitions, and preliminary findings of the health interview survey conducted co-operatively by the Hawaii State Department of Health, the Oahu Health Council, and the National Health Survey.

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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Washington, D. C. May 1960

U. S. NATIONAL HEALTH SURVEY

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The U. S. National Health Survey is a continuing program under which the Public Health Service makes studies to determine the extent of illness and disability in the population of the United States and to gather related information. It is authorized by Public Law 652, 84th Congress.

CO-OPERATION OF THE BUREAU OF THE CENSUS

Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies. For the Health Interview Survey the Bureau of the Census designed and selected the sample, conducted the household interviews, and processed the data in accordance with specifications established by the Public Health Service.

Public Health Service Publication No. 584-C3

PREFACE

The Hawaii Health Survey has been notable as a co-operative achievement of private, State, and Federal resources. The sample design of the U.S. National Health Survey precludes obtaining separate estimates of health characteristics of the population for any single territory or State. Nevertheless, the needs for health statistics for Hawaii were considered urgent and a way to obtain them was sought. To this end Richard K.C. Lee, M.D., Director of Health, Hawaii State Department of Health, initiated the arrangements whereby services and facilities of his department were combined with the technical knowledge and assistance of the National Health Survey and the Bureau of the Census, and with further advisory or financial assistance of the Oahu Health Council and other local health and welfare agencies, foundations, and industries.

In addition to initiating the Survey, the Hawaii State Department of Health contributed funds, directed local organization, provided public information services, assisted in field work incident to sampling, furnished travel and office facilities, and provided local personnel for field and office procedures. These activities were under the direction of Charles G. Bennett assisted by George H. Tokuyama, of the Bureau of Health Statistics.

The Oahu Health Council, a co-ordinating agency for health organizations on the Island of Oahu, gave enthusiastic support to the survey. Through its Hawaii Health Survey Advisory Committee, with Mrs. John Wm. Devereux as Chairman, the Council assisted in securing widespread publicity, advised on policy matters, and obtained substantial funds for local expenses. The membership of this Advisory Committee is shown in Appendix IV.

Local expenses included items for interviewer training, field interviewing of families, and supervisory services provided by the Bureau of the Census. Funds were obtained through contributions by various organizations and business concerns of Hawaii. A list of these is given in Appendix IV.

The National Health Survey financed central office services provided by the Bureau of the Census, which was responsible for designing the sample, coding the completed questionnaires, preparing sampling error data, and related operations. In addition, the National Health Survey processed the UNIVAC tapes, programed and produced the tabulations, and furnished technical advisory service.

Because the design, definitions, and tabulations of the Hawaii Health Survey were virtually the same as for the nationwide health interview survey, this first report was prepared by the National Health Survey. Further analysis of the data will be conducted and released by the Hawaii State Department of Health.

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SYMBOLS AND NOTES

Data not available (three dashes)	---
Category not applicable (three dots)	...
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Magnitude of the sampling error precludes showing separate estimates	(*)

NOTE: Due to rounding detailed figures within tables may not add to totals

THE HAWAII HEALTH SURVEY

INTRODUCTION

In addition to the usual function of maintaining vital records, the Bureau of Health Statistics of the Hawaii State Department of Health engages in a wide variety of research and program studies concerning morbidity and medical care of the population of the Islands. Because of this active statistical program and the lack of other sources of data specific to Hawaii, the State Department of Health is widely and frequently used as a source of morbidity information and consultant service. Changes in the characteristics of the population, changing patterns in utilization of medical care facilities, and shifts in emphasis on health programs and functions have resulted in an increasing volume of requests for health statistics concerning the population of Hawaii. Concurrently these same factors have multiplied the problems of obtaining up-to-date health data. The scarcity of information needed for administrative and program planning, health education, research, and many other purposes dictated that an effort be made to fill some of the gaps in knowledge concerning morbidity and disability.

The problem of insufficient health data has not been peculiar to Hawaii. The same needs for all of the United States resulted in passage of the National Health Survey Act (Public Law 652, 84th Congress) in 1956. The Act, specifically recognizing that data on the health of the Nation's people were insufficient and seriously out of date, authorized the Surgeon General of the Public Health Service to make surveys and special studies of the population of the United States to determine the extent of illness and disability. In addition, the Act authorized co-operation and provision of technical assistance on health surveys and studies to other agencies and State health departments. After a year of developmental work, organization of field operations, and pretesting, collection of health statistics on a national sample of households started in July 1957. Because the most urgent need was for health statistics for the Nation as a whole, and because of cost limitations, the sample design of the National Health Survey did not provide for obtaining independent estimates by State.

Hawaii, as a territory or as a State, could not look to the Public Health Service alone to meet its needs for local health data. However, there were several advantages to utilizing the services and techniques of the National Health Survey. These advantages were:

(a) The concepts, definitions, and methods had already been developed and pretested.

(b) Expert technical knowledge of sample design and population coverage was available.

(c) Training and field procedures, administered through the Bureau of the Census, had been tested in actual operation.

This report was prepared by Philip S. Lawrence, of the U.S. National Health Survey staff.

(d) Questionnaires, interviewer training manuals, and other working documents were currently available.

(e) Coding, editing, and tabulating could be done by the same techniques and, through agreement, by the same personnel as for the National Health Survey.

(f) Use of identical methods would permit valid comparisons to be made with statistics for the mainland.

Because of these advantages the Hawaii State Department of Health entered into agreements with the National Health Survey and with the Bureau of the Census to conduct a household survey which would be for all practical purposes identical to the health interview survey conducted on the mainland during roughly the same time interval.

This is a report of the Hawaii Health Survey conducted on Oahu. It is intended to provide users of data derived from the survey with a background for interpretation of the results. The report is divided into two principal parts. Part I is a general description of the content and structure of the Hawaii Health Survey, including some of the basic findings. Part II presents a more detailed description and technical information on the design, processing, quality control, and methods of estimation employed in the survey. Although Part I can be read without reference to Part II, the latter section will give the reader a better insight into the meaning and quality of data presented in this and in subsequent reports.

PART I
THE SURVEY PROCEDURES AND SELECTED RESULTS

POPULATION COVERAGE

The Hawaii Health Survey was conducted on the Island of Oahu from September 29, 1958 through September 28, 1959. The data were collected by interviews in a scientifically designed sample of households geographically distributed throughout the Island. Interviewing was conducted continuously throughout the year, each week's sample having been selected at random from among all of the households on the Island. Approximately 3,300 households were interviewed, comprising 12,500 persons in the resident civilian non-institutional population of Oahu.

Interviews were not conducted in institutions which provide long-term medical or domiciliary care nor in penal institutions. During the interview, persons found to be on active duty in the Armed Forces of the United States were excluded, but members of their families were included. Also excluded from the interview were persons who had a home elsewhere. Therefore vacationers to Oahu were excluded as well as persons who did not regularly reside on Oahu at the time of the interview.

FIELD PROCEDURES

Household visits were made by 10 interviewers who were residents of Oahu and who qualified by examination, training, and trial interview observations conducted by the Bureau of the Census. In addition to the normal requirements the interviewers also had language proficiencies or other qualifications suited to health survey work in Hawaii. Throughout the survey they received their direction from an experienced Bureau of the Census field supervisor who had responsibility for field operations as well as for interviewing quality. The quality control procedures consisted of group refresher training, monthly home training exercises, field observation of individual inter-

viewers, and independent reinterviews by the supervisor. In addition, the weekly assignments of households to interviewers were randomized in order to distribute throughout the data any differences among interviewers.

The interviewers received their assignments in geographic clusters, or segments, of about six households each. Prior to a visit, the household received a letter which briefly explained the purpose of the interview and the fact that the information would, as specified by law, be treated confidentially. Perhaps this contributed to the very low refusal rate of less than 1 percent of the sample households. Interviews were conducted with an adult person who was considered competent to answer for himself and related household members. However, on all health questions any adult who was at home at the time of the visit was interviewed for himself. Furthermore, no person in the household was permitted to report on the health of anyone unrelated to himself. A related adult, usually the mother, responded for each child. In the event that no one was at home at the time of the initial call repeated visits were made, resulting in an over-all response rate of about 96 percent of the households.

THE QUESTIONNAIRE AND INTERVIEW

The Household Interview questionnaire used in the Hawaii Health Survey is reproduced in Appendix III of this report. This questionnaire is, for all practical purposes, identical to the one used on the mainland from July 1958 through June 1959 and, with the exception of a few additional questions, is the same as the questionnaire used for the United States during July 1957 through June 1958. Not only had the questions been used in actual field operations, but prior to introduction in the National Health Survey extensive pretests had been conducted. While there were definite advantages to Hawaii in the use of this questionnaire, there were also some disadvantages in that other health topics of particular interest to Hawaii could not be included. Modifications would have required alteration of interviewing and data processing procedures at a prohibitive increase in cost. However, a review of the questionnaire will indicate that a large number of the basic topics of interest were included.

Interviewers were instructed to be polite and tactful, but also to be persevering and businesslike. Although they were not expected to perform by rote in achieving rapport with the respondent, they were required to adhere to the sequence and wording of the questionnaire. Even though the questions were designed to minimize misinterpretation by the respondent, difficulties of this type were certain to arise. To direct her in clarifying the meaning of the questions and in handling unusual situations, each interviewer carried with her a detailed instruction manual. The manual, training, and continued supervision emphasized that the interviewer should not ask leading questions nor record her own interpretations of illnesses or other replies of the respondent. Reduction of bias and comparability of data could be assured only by using the same questionnaire, interviewing rules, and processing techniques as were used in the National Health Survey.

The questionnaire was divided into several major sections. The first of these related to completeness of coverage of persons in the household and demographic information concerning these persons. Any responsible adult member of the household was an eligible respondent for these items, but for the remainder of the questionnaire the respondent rules described earlier were followed.

The next set of questions, referred to as "illness-recall" questions were for the purpose of eliciting the reporting of morbidity conditions—acute illnesses, recent injuries, current effects of old injuries, chronic diseases, and impair-

ments. Each of these types of morbidity conditions is defined in Appendix II. Certain of the questions were designed primarily to obtain data on the incidence of acute illnesses and injuries. These questions were phrased in terms of "last week or the week before" in order to obtain more complete reporting than would have been possible with a longer time period. Other "illness-recall" questions were designed to obtain reports of chronic conditions and impairments which were prevalent at the time of the interview.

Whenever an injury, or the residual effects of an old injury, was reported, the interviewer recorded information about the circumstances of the original accident in table A. Only one entry was made in table A for each accident incurred by a person, irrespective of the number of injuries which he suffered as a result of that specific accident.

Each separate morbidity condition reported from the "illness-recall" questions was recorded in table I, the next major section of the questionnaire. A number of queries were made in order to define the conditions in the most explicit terms permitted by the respondents' knowledge. Further questions determined whether, during the preceding two weeks, the specific conditions had resulted in any disability, that is, days of restricted activity, days in bed, or days lost from work or school.

The time of onset, obtained in table I, was used to classify conditions as to whether they were acute or chronic. Chronic conditions were those which had started more than 3 months prior to the date of interview, or which were considered chronic by virtue of the nature of the condition. Those conditions always considered as chronic, for purposes of the survey, are shown on Cards A and B in Appendix III.

No further information was asked about acute conditions, but for chronic conditions additional data were obtained concerning the duration, recency of medical care, current medical care, and bed disability in the year prior to the interview. This information was used as a means of broadly categorizing chronic conditions as to their severity.

The final items of table I determined the extent of limitation among persons with one or more chronic conditions in relation to the usual activities of working, keeping house, going to school, or engaging in play, as appropriate to the individual, and also the extent to which such persons were limited in mobility. Cards C through G, reproduced in Appendix III, were used for this purpose. To provide an additional measure of the severity of chronic conditions, respondents were asked which conditions contributed to the stated chronic limitations of activity.

The last page of the questionnaire was devoted largely to information on utilization of health services—dental visits, medical visits, hospitalization, and home nursing care. In the medical care section the emphasis was on measuring the total volume of visits to a doctor of medicine or osteopathic physician. The dental care questions were designed to estimate both the total volume of visits and also the frequency of visits in the year.

Each separate hospitalization for overnight or longer, that had occurred during the year preceding the week of interview, was recorded in table II. For each inpatient episode, information was obtained on length of stay, the primary condition causing the hospitalization, and operations that were performed. Respondents could not, however, be expected to supply reliable information regarding the classification of hospitals by type of service or ownership. This information was available in the central office, where the names of hospitals reported by respondents were checked against an index.

Additional topics on the questionnaire included the utilization of insurance to pay hospital

costs, home nursing care, and the use of special aids. Data on these topics will not be presented in this report, but the operational definitions used are contained in Appendix II.

GENERAL QUALIFICATIONS OF THE DATA

Limitations of the Survey

The foregoing account of the procedures and contents of the interview suggests the types of statistics that the survey can produce. It is well to understand, however, that surveys, including this one, have certain limitations which should be recognized if misuse of the results is to be avoided. The more detailed qualifications, applying to specific health topics, will be pointed out in sections of this report which present some of the survey results, and also in future publications of the data. There are also general qualifications which apply to the survey as a whole or to major portions of it. These qualifications should be considered in assessing the applicability of the survey data to specific needs for health information.

Costs and technical considerations dictated that the survey sample include only the Island of Oahu and that it be limited to about 3,300 households. Data obtained from this sample are estimates that are subject to sampling errors. These estimates, for many of the statistics obtained, are close approximations to results that would be obtained from a survey of the entire population of Oahu. However, reliable estimates cannot be provided from the sample survey for those kinds of morbidity conditions or other characteristics that have low frequencies in the population. Even for conditions of higher frequency there are limitations to the amount of detail that can be shown by age and other cross-classifications of the data. Appendix I presents additional information on sampling errors and tables of sampling errors for estimates of various kinds and frequencies of statistics.

The Oahu sample was a sample of the civilian, noninstitutional population living at the time of interview. The survey provides estimates for this population only. The principal cautions concerning population coverage are listed below:

(a) Questions were not asked about former members of the household now deceased. Therefore hospital statistics do not purport to show the entire volume of hospital utilization of the total population living or dying during the year prior to interview. They show rather the experience in the previous year for the current living population. Hospital statistics from the survey do not agree with similar statistics from hospital record sources, not only because hospital records include decedents, but also because of other differences in the sources of data.

(b) Morbidity, disability, and medical care of persons in resident institutions are not included in the estimates provided by the survey. Exclusion of the institutional population has little effect on many of the statistics obtained, but must be taken into account in the interpretation of data on types of conditions for which institutional care is common, or data on the number of persons who have chronic limitations of activity or mobility.

(c) Persons who were on active duty in the Armed Forces of the United States at the time of interview were excluded from the sample. However, members of their families, whether living in private quarters or in quarters provided by the government, were included. If it is desired to supplement data from the survey with data on Armed Forces personnel, the latter would have to be obtained from military sources.

Another limiting factor in the accuracy of the statistics results from "proxy" respondents in

the household interview. From the standpoint of reliability of response, it would be ideal if every adult could be interviewed for himself. But this would require multiple visits to the households and considerably greater costs. The respondent rules which were adopted (described under "Field Procedures") resulted in self-responses by about 80 percent of adult females in the sample and 40 percent of adult males. The remainder were reported for by "proxy" respondents—related persons living in the same household, usually the spouse.

The most important general consideration is that a household survey secures its information from members of the family, and, while they usually pass on information given to them by physicians, the results cannot be considered as equivalent to medical records or physical examination findings. To obtain precise diagnostic data other methods must be used.

The survey measures levels of illness or disease in terms of cases which the respondent has been made aware of, remembered, and considered sufficiently important to report. As contrasted with clinical data on chronic illnesses and the uses to which such data are applicable, the interview survey provides information on chronic conditions which have had some social or economic effects on the life of the individual or his family. In general, the more severe the effects the better is the reporting of such conditions. Exceptions to this are those types of conditions which respondents wished to conceal and which are therefore underestimated in the statistics.

As to diagnostic detail, the interviewers obtained descriptions of what the respondents recalled from their physicians' statements; or for medically unattended cases the reports contained symptomatic descriptions of the conditions. Diagnostic precision cannot be implied where it does not exist in the original data, and therefore tabulations by type of condition must be in rather broad groupings.

Strengths of the Survey

Counterbalancing certain inherent weaknesses, a health interview survey has a number of strengths as a data collection technique. Principal among them is that a properly designed sample, such as that of the Hawaii Health Survey, obtains data on the population base subject to the risk of ill health or disability, along with the information on the sick. Not only does this avoid generalizing to the population as a whole from studies based upon limited or specialized population groups, but it also permits measurement of health characteristics for various demographic subdivisions of the population.

A health interview survey provides a broad spectrum of useful data about the population at relatively low cost. A wide range of topics for which household respondents can be expected to furnish information can be included within a single-visit interview of reasonable length.

It has been suggested earlier that one of the strengths of the survey is its ability to measure the social impact of morbidity. This stems from the fact that certain types of information can best be obtained from the people themselves. There is no other present source of data on reduction of activity or bed disability. This is also true for the many acute illnesses which may cause periods of disability but for which medical attention is not sought.

Record sources exist for data on many types of health and medical care characteristics, but such sources often exclude, or cover incompletely, certain major classes of the population. For example, data on work loss due to illness are available from larger industries, but may be deficient in coverage of the self-employed or farm populations. Similarly, serious motor-vehicle injuries are reported by official sources, and statistics on industrial injuries are obtainable from industrial records, but there is no centralized source for reporting of the tremendous volume of injuries occurring in the home or in public places.

To summarize, the interview survey is the present method of choice for completeness of population coverage on topics relating to the social impact of morbidity. For certain kinds of health information it is the only source of data now available.

SELECTED SURVEY RESULTS

Statistics presented in this section of the report are a selection from the several topics of health information contained in the survey. For each of the topics covered the report contains only a small part of the data available. Other sections of the report related to the survey as a whole, and to all of the topics and items of information obtained, as a background to data that will be released in future reports to be produced by the Hawaii State Department of Health.

Frequencies and rates shown in this section are estimates based upon a sample of households rather than upon the entire population, and they should not be considered as exact figures. The frequencies in individual cells of some tables are subject to high sampling errors. These frequencies are shown in order to provide the general magnitude of the statistic, and to show over-all age-sex patterns. Sampling error calculations have been made for the different types of data obtained in the survey, and tables of sampling errors are presented in Appendix I. These tables should be referred to in interpreting the reliability of the estimates. Additional information about the sample and about methods of arriving at the estimates is given in Part II.

Certain definitions have been given in preceding sections of the report, but only in general terms. Detailed definitions are presented in Appendix II. Since many of the terms used have specialized meanings for the purposes of the survey, familiarity with these definitions will assist the reader in interpreting the material presented. Further information concerning the concepts underlying the definitions used may be found in "Concepts and Definitions in the Health Household-Interview Survey."[1]

Survey Population Estimates

In order to give meaningful interpretation to statistics on health, these statistics must be related to the characteristics of the population. The Hawaii Health Survey obtained estimates of a wide variety of demographic data. The objective of the survey in obtaining such data was not to provide population information for general use, but rather to provide bases for the health information. These population estimates are most appropriate for this purpose since they were derived from the same sample and field procedures as were the rest of the data. Population figures produced by the Hawaii Health Survey may not agree with other unofficial estimates, nor with official estimates, because of differences in the time reference and also because of differences in survey techniques and inclusions.

The population of Oahu varies considerably from that of the United States as a whole with respect to nearly all of the important demographic characteristics. For this reason, certain comparisons of data on health in Hawaii with data for the mainland would, in order to be meaningful, require controlling or adjusting for these population differences. In the following sections references will occasionally be made to figures for the United States (mainland). Such references will, unless otherwise specified, be to National Health Survey estimates for the civilian noninstitutional population, exclusive of Hawaii and Alaska, for the year July 1958 through June 1959. In general, comparisons with data for the United States will be made with regard to internal consistency by

[1] U.S. National Health Survey. Concepts and Definitions in the Health Household-Interview Survey. Health Statistics. Series A-3. Public Health Service Publication No. 584-A3. Public Health Service, Washington, D. C., Sept., 1958.

age and sex, rather than to differences in levels of health measurements.

It is beyond the scope and purpose of this report to present and discuss the numerous population and social characteristics that bear upon health and disability. The presentation has been restricted to tabulations by age and sex in order to include a larger number of health topics, rather than to cover all of the demographic factors for only one or two topics.

During the year October 1958 through September 1959 the average civilian, noninstitutional population of Oahu was 461,900, as estimated from the survey. Table I shows this population divided into the age and sex groupings which are employed in subsequent tables. The figures shown have been rounded to the nearest 100 persons, a practice which has been followed for all of the person data presented in the report. However, rates contained in the report were computed from unrounded figures. Because of this, rates which the reader may compute using the rounded figures may not agree precisely with those shown.

Table 2 and figure 1 show that the population of Oahu, as estimated from the survey, was quite different from that of the mainland with respect to age. Oahu had a higher proportion of children and a lower proportion of older persons. About 18 percent of the Oahu population was 45 years of age and older as contrasted with about 29 percent of the U. S. mainland in these ages. Although it is not shown graphically this same general age pattern exists for each sex. However, the population of the mainland has a lower ratio of males to females in the older ages, 0.91 males to each female at ages 45 years and over, whereas on Oahu the corresponding ratio is 1.2 males to each female.

Table 1. Civilian noninstitutional population of Oahu, Hawaii: Estimated from Hawaii Health Survey, October 1958-September 1959

Age	Population		
	Both sexes	Male	Female
All ages-	461,900	216,300	245,500
Under 5-----	72,100	35,600	36,500
5-14--------	115,900	56,500	59,300
15-24-------	58,700	23,900	34,800
25-44-------	133,400	55,700	77,700
45-64-------	63,200	34,800	28,300
65+---------	18,600	9,700	8,900

Table 2. Percent distributions of the civilian noninstitutional populations of Oahu, Hawaii, October 1958-September 1959, and of the United States, exclusive of Hawaii and Alaska, July 1958-June 1959

Age	Oahu, Hawaii			United States		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages----------	100.0	100.0	100.0	100.0	100.0	100.0
Under 5----------	15.6	16.5	14.9	11.5	12.0	11.0
5-14----------	25.1	26.1	24.2	20.0	21.0	19.1
15-24----------	12.7	11.1	14.2	12.8	12.4	13.2
25-44----------	28.9	25.8	31.6	26.6	26.2	26.9
45-64----------	13.7	16.1	11.5	20.5	20.4	20.6
65+----------	4.0	4.5	3.6	8.7	8.1	9.2

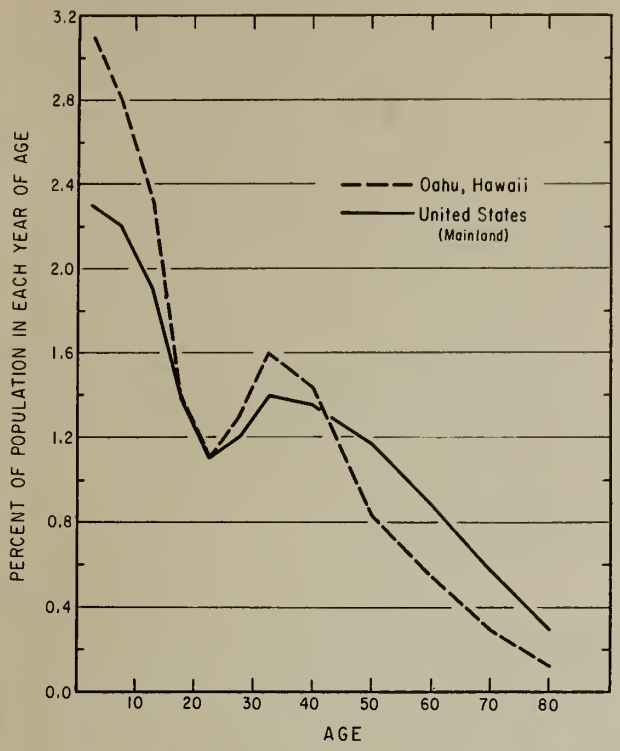


Figure 1. Percent distributions of the populations of Oahu, Hawaii and of the mainland according to age.

The effect of the age and sex composition of Oahu is reflected in statistics on the incidence of acute illnesses, prevalence of chronic conditions, and other aspects of health information shown in the sections that follow.

Dental Visits

During the year October 1958-September 1959, an estimated 461,900 persons on Oahu made 1,358,000 visits to the dentist or 2.9 visits per person (table 3). Any trip to a dentist's office for treatment or advice was counted as a visit, even though the service may have been provided by a dental hygienist working under the dentist's supervision.

The rate of dental visits in the year among males was slightly lower, 2.7 visits, than the rate for females, 3.1 visits. This is consistent with the experience on the mainland where the corresponding rates for males and females were 1.3 and 1.7. It is evident from these figures that the over-all rate of visits in Hawaii was considerably higher than on the mainland.

There was a consistent decrease in the rate of dental visits with increasing age for the groups 5 years of age and older. This decrease with age existed for both males and females, but the rate of visits for females considerably exceeded that for males at ages 25-44 and also in the oldest age group, 65 and over.

The rate of dental visits per person per year tells one story of the utilization of dental services, but fails to tell another. Although the rate

Table 3. Number of dental visits in the year and number of dental visits per person per year by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of dental visits in thousands			Number of dental visits per person per year		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	1,358	587	771	2.9	2.7	3.1
Under 5	99	54	45	1.4	1.5	1.2
5-14	556	252	304	4.8	4.5	5.1
15-24	203	86	117	3.5	3.6	3.4
25-44	366	129	237	2.7	2.3	3.0
45-64	110	58	52	1.7	1.7	1.8
65+	24	8	16	1.3	0.8	1.8

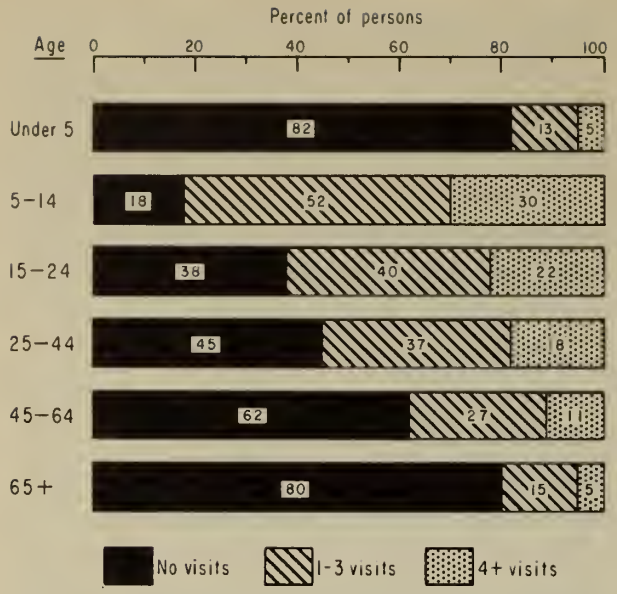


Figure 2. Percent distribution of persons according to number of dental visits during the year by age.

was about 3 visits per person, 47 percent of all people, and 41 percent of those 5 years and older had not visited the dentist at all during the year (table 4). As shown in figure 2, only 18 percent of children of grade school ages had not seen the dentist, but this proportion increased rapidly in succeeding age groups. Of those persons who had made at least one visit, one third of them had been to the dentist 4 or more times.

As compared with the mainland, Hawaii has a higher volume of dental care, with respect to both average per capita visits and frequency of visits. A large part of the higher frequency in Hawaii is among persons who visited the dentist 4 or more times, 18 percent of the Oahu population, as compared with 9 percent of the U. S. population. Also a large part of the difference can be attributed to the dental care of young persons. About 75 percent of those between 5 and 25 years of age had been to the dentist at least once during the year on Oahu, while for the mainland only 52 percent of persons in the same age group had seen the dentist.

Physician Visits

The people of Oahu made a total of 2,604,000 physician visits during the survey year. This includes visits at the physician's office and also visits by the physician to the patient's home. These visits included consultations with the physician (either a doctor of medicine or an osteopathic physician) in person or by telephone, for service provided directly by the physician or by a nurse acting under his direction. A visit by the physician while a person was a hospital inpatient was not included nor were any visits which were made for services rendered on a mass basis for a specific type of procedure, such as mass X-rays.

Table 5 shows that the total volume of visits was greater for females than for males, and

Table 4. Number and percent distribution of persons according to frequency of dental visits by sex: Oahu, Hawaii, October 1958-September 1959

Number of dental visits during the year	Number of persons			Percent of persons		
	Both sexes	Male	Female	Both sexes	Male	Female
Total	461,900	216,300	245,500	100.0	100.0	100.0
No visits	216,900	108,200	108,700	47.0	50.0	44.3
1 visit	75,000	36,400	38,600	16.2	16.8	15.7
2 visits	60,100	26,500	33,700	13.0	12.2	13.7
3 visits	26,900	11,800	15,100	5.8	5.4	6.2
4+ visits	83,000	33,600	49,400	18.0	15.5	20.1

Table 5. Number of physician visits in the year and number of physician visits per person per year by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of physician visits in thousands			Number of physician visits per person per year		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages	2,605	1,122	1,482	5.6	5.2	6.0
Under 5	620	316	304	8.6	8.9	8.3
5-14	540	270	271	4.7	4.8	4.6
15-24	330	99	230	5.6	4.1	6.6
25-44	696	218	478	5.2	3.9	6.1
45-64	335	181	154	5.3	5.2	5.4
65+	84	39	46	4.5	4.0	5.1

Table 6. Number and percent distribution of physician visits according to place of visit by age: Oahu, Hawaii, October 1958-September 1959

Age	Place of visit					
	Total	Office	Home	Hospital clinic	Company unit	Telephone and other
	Number of physician visits in thousands					
All ages	2,605	1,596	39	638	152	316
Under 5	620	312	5	201	-	101
5-14	540	313	10	149	35	64
15-24	330	173	2	121	44	29
25-44	696	477	5	124	20	88
45-64	335	261	11	28	53	29
65+	84	59	6	16	-	33
	Percent distribution					
All ages	100.0	61.3	1.5	24.5	0.6	12.1
Under 5	100.0	50.4	0.9	32.4	-	16.4
5-14	100.0	57.9	1.9	27.6	0.6	11.9
15-24	100.0	52.6	0.6	36.7	1.3	8.8
25-44	100.0	68.5	0.8	17.8	0.3	12.7
45-64	100.0	78.1	3.2	8.4	1.6	8.8
65+	100.0	70.3	6.9	18.8	-	4.0

also that females used physician services at a higher rate per person during the year. This sex difference was consistent in all age groups 15-24 and older, and was particularly marked during the childbearing ages. The higher rate of physician visits for females is consistent with figures for the United States, exclusive of Hawaii and Alaska, where males averaged 4.2 visits and females 5.3 visits per person during the year July 1958 through June 1959.

With increasing use of specialists' services and other changes in patterns of medical care, interest has developed in the manner in which medical services are being used. Table 6 presents one aspect—the place of medical visit. About 61 percent of all visits were in the physician's office, and 1.5 percent were visits made to the patient's home. Approximately one quarter of the visits were outpatient visits to clinics and the remainder were other types of visits, such as those to health units at the place of work or telephone consultations. This is quite different from the mainland, where 9 percent of the visits were made in the home and about 9 percent to outpatient clinics.

The proportions of visits by place varied with age. Only about half of the visits by children were to physicians' offices, while substantial proportions were to hospital clinics and by telephone consultation. Persons of middle-aged groups had a high proportion of office visits. Among older persons the proportion of visits which physicians made to the home was 6.9 percent as contrasted with 1.5 percent for the entire population.

Figure 3 shows the percent of visits by sex for the several places of visit. About 43 percent of all visits were by males, but 70 percent of visits to company health units were by males. Females, however, had the higher percents of visits to hospital clinics and consultations by telephone. In the United States, exclusive of Hawaii and Alaska, males also made 43 percent of the

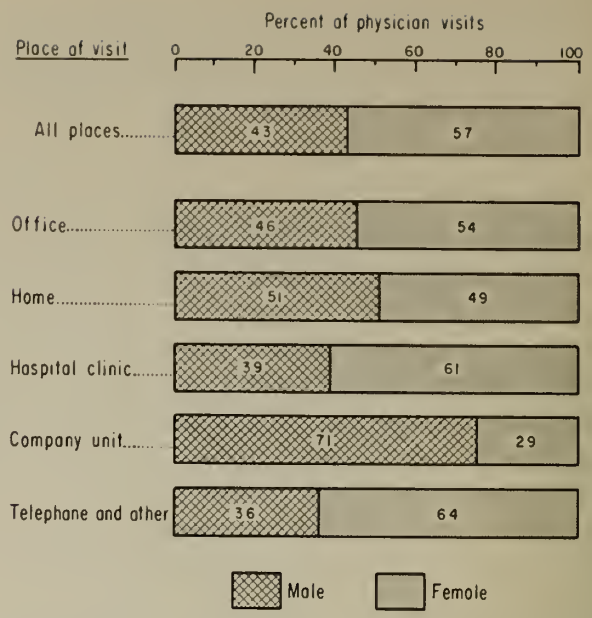


Figure 3. Percent distribution of physician visits by males and by females for each place of visit.

physician visits, but on the mainland about 48 percent of the visits to clinics and 79 percent of the visits to company health units were by males.

Hospitalization

During the interview, questions were asked to determine whether during the past year any member of the household had been in any type of institution which might be considered a hospital. The names of all such places reported were later checked against a comprehensive list of hospitals in the United States and Territories. Types of institutions which did not meet the survey definition of a hospital given in Appendix II were excluded from the tabulations for this report.

Each episode of hospitalization during the year prior to the week of the interview was entered in table II of the questionnaire, shown in Appendix III. Further questions concerning the details of the hospitalizations were asked, but the present report contains statistics only on the age and sex characteristics of patients discharged from short-stay hospitals, and the number of days

of hospitalization associated with these discharges. For short-stay hospitals, which are defined in Appendix II, the number of discharges in a year very closely approximates the number of admissions.

Hospital data were obtained for the civilian noninstitutional population of Oahu from household interviews conducted continuously throughout the year October 1958-September 1959. Since the hospital experience reported was for the year prior to the week of interview, the data include discharges that occurred over a two-year-calendar period, but the statistics represent the hospital experience during a time interval of a single year.

The data contained in this report will not agree with data from hospital record sources, not only because of the unusual time period covered, as described above, but also because of other factors. One of these, the exclusion of the hospital experience of persons who had died during the year, and about whom information was not obtained in the household interview, has been discussed in the section on "Qualifications of the Data." Another factor is the exclusion in the survey of patients who were not hospitalized overnight. Such persons are usually included in statistics from hospital records.

The principal advantage of collecting hospitalization data in a population survey is the opportunity it provides for obtaining information on population characteristics which is not usually available from hospital records. While this material has not been presented in this report, the collected data will permit tabulations of hospitalizations in relation to various demographic and other population characteristics.

There were approximately 48,700 discharges from short-stay hospitals during the year, and about 365,500 hospital days for these discharges. These figures and frequencies of discharges and days by age and sex are shown in table 7. There was an over-all average of 106 discharges per 1,000 persons, but the rate for females was considerably greater than for males, as shown in table 8. The sex difference was accounted for almost entirely by the very high rates for females within the age groups from 15 to 44, which included women who were hospitalized for delivery. Among children, the rate of hospital discharges for males was higher than for females, a difference which existed also on the mainland. The age

Table 7. Number of hospital discharges and number of hospital days in short-stay hospitals by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of hospital discharges			Number of hospital days		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages----------	48,747	15,919	32,828	365,452	165,693	199,759
Under 5----------	5,474	3,497	1,977	42,582	25,894	16,688
5-14----------	5,849	3,408	2,441	27,916	18,878	9,038
15-24----------	9,436	1,540	7,896	50,700	14,877	35,823
25-44----------	19,626	3,121	16,505	115,488	35,504	79,984
45-64----------	6,537	3,345	3,192	88,508	49,854	38,654
65+----------	1,825	1,008	817	40,258	20,686	19,572

Table 8. Number of hospital discharges and number of hospital days per 1,000 population by age and sex: Short-Stay Hospitals, Oahu, Hawaii, October 1958-September 1959

Age	Hospital discharges per 1,000 persons			Hospital days per 1,000 persons		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages----------	105.5	73.6	133.7	791.2	765.9	813.6
Under 5----------	76.0	98.2	54.2	590.9	727.4	457.6
5-14----------	50.5	60.3	41.1	240.9	333.9	152.3
15-24----------	160.6	64.4	226.6	863.0	622.2	1,028.2
25-44----------	147.1	56.0	212.4	865.4	636.9	1,029.5
45-64----------	103.5	96.0	112.7	1,401.5	1,430.9	1,365.3
65+----------	98.1	103.8	92.0	2,164.5	2,129.5	2,202.8

differential in the utilization of hospital services by males and females shows up markedly in the percent distributions presented in figure 4.

The hospital discharge rate for children was higher in Hawaii (60 per 1,000 persons under the age of 15) than it was on the mainland (53 per 1,000 persons under 15 years of age). However, at older ages, 65 years and older, the reverse was true, 98 discharges per 1,000 on Oahu, as compared with 121 on the mainland. The figures for children do not include hospitalization of well newborn infants.

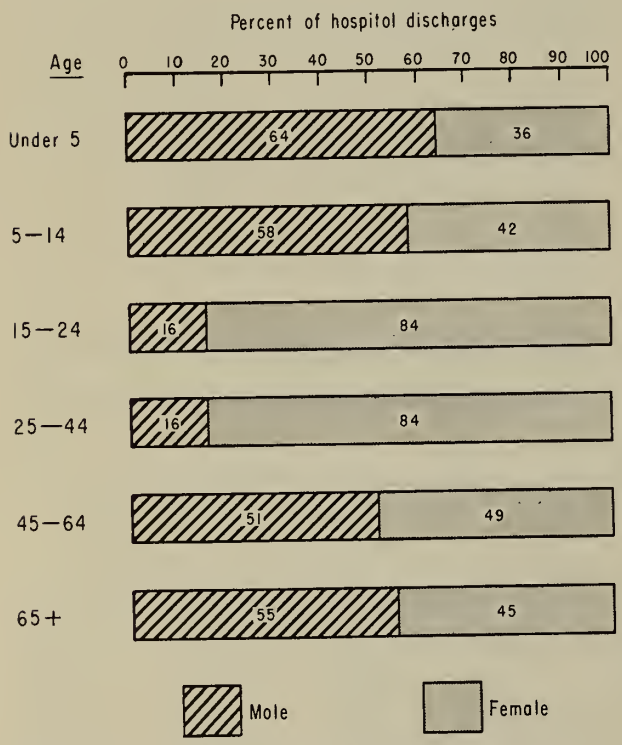


Figure 4. Percent of males and of females discharged from short-stay hospitals in each age group.

Differences in rates of hospitalization and of duration of stay between areas reflect more than the differences in morbidity between the populations of these areas. Also to be considered are the availability of hospital facilities, medical care practices, and various demographic characteristics, such as age, degree of urbanization, and levels of income. National Health Survey Report, Series B, Number 7, contains hospitalization data according to some of these factors for the survey year July 1957-June 1958. Figures for the mainland quoted in this section of the present report were taken from this publication.

The rates of hospital days per 1,000 population differ in age and sex distribution from the pattern for rates of patients discharged. For example, among males the rate of hospital discharges increased only slightly in the 15-24 year age group, but the rate of hospital days was about twice that of the preceding age group. This may be related to the volume and types of injuries ex-

perienced by males in these ages. For both sexes, in the older ages, the rate of days per 1,000 persons was disproportionately higher than the hospital discharge rate.

Table 9 shows that the average length of stay per hospital discharge was about 7½ days, 10 days for males and 6 days for females. On the mainland the average stay was about 8½ days, 11 days for males and 7 days for females. The shorter average length of stay for females results principally from the large volume of hospitalizations for childbirth, as is indicated by the age distribution of length of stay.

Table 9. Average length of stay per discharge from short-stay hospitals by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Average length of stay in days		
	Both sexes	Male	Female
All ages-------	7.5	10.4	6.1
Under 5----------	7.8	7.4	8.4
5-14---------------	4.8	5.5	3.7
15-24--------------	5.4	9.7	4.5
25-44--------------	5.9	11.4	4.8
45-64--------------	13.5	14.9	12.1
65+----------------	22.1	20.5	24.0

Although the average duration of stay for all ages was about 1 day longer on the mainland, children under 15 years of age were in the hospital about 1 day longer on Oahu. Duration of stay was shorter on Oahu among young adults, where the volume of hospital discharges was large, but was somewhat longer than on the mainland among persons over 45 years of age. It should be noted that sampling errors for days of hospital stay are relatively large.

Acute Conditions

With the increased emphasis placed on chronic diseases in recent years there has been a tendency to overlook the importance of acute conditions as a cause of ill health and disability. However, the occurrence of epidemics and problems of environmental health have resulted in renewal of interest in the magnitude of the incidence of acute illnesses and injuries.

In the Hawaii Health Survey an acute condition was defined as any condition which had lasted for less than 3 months, exclusive of the conditions listed on Cards A and B of Appendix III, which are considered chronic by definition. In practice, the acute conditions included in the measurement of incidence were those which had their onset within the two-week period prior to the week of interview, and for which the person had seen a physician or cut down on his usual activities for at least a day. The two-week incidence figures were expanded to a yearly total to provide estimates of the annual incidence.

The number of medically attended or activity-restricting acute conditions in the year was 1,264,000, which averaged close to 3 such conditions for each person in the population.

Acute respiratory conditions accounted for about 60 percent of all the acute conditions tabulated (fig. 5). Injuries of all types constituted 13 percent, digestive conditions 6 percent, infectious and parasitic diseases 6 percent, and the remainder in lesser amounts which were combined in the tables presented. Types of conditions were coded in greater diagnostic detail than shown, but were grouped for tabulation as described in Part II in the section on "Medical Coding."

It was expected that the incidence of acute conditions generally would decrease with age. As shown in table 10 the range was from about 450 for each 100 children under age 5 to 113 for each 100 persons 65 years of age and older. The de-

Table 10. Annual incidence of acute conditions according to condition group by age: Oahu, Hawaii, October 1958-September 1959

Condition group	Age						
	All ages	Under 5	5-14	15-24	25-44	45-64	65+
	Number of acute conditions						
All conditions---	1,264,000	325,200	360,000	141,800	302,200	113,800	20,900
Infectious and parasitic---	73,500	34,700	27,400	5,200	6,200	-	-
Upper respiratory---	517,800	174,200	143,900	44,300	103,700	47,300	4,300
Other respiratory---	234,600	33,500	70,900	29,800	72,300	23,700	4,300
Digestive system---	77,100	13,100	21,900	10,300	21,200	9,000	1,700
Fractures, dislocations, sprains, and strains---	27,600	900	7,100	3,600	8,000	4,500	3,500
Open wounds and lacerations---	64,700	8,100	17,100	10,400	20,000	8,200	(*)
Contusions and superficial injuries---	42,100	6,900	11,700	7,800	9,600	4,400	1,700
Other current injuries-	33,500	7,000	9,000	4,300	8,900	4,300	-
All other acute conditions---	193,300	47,000	51,100	26,100	52,200	12,500	4,500
	Rate per 100 persons						
All conditions---	273.7	451.3	310.7	241.4	226.4	180.3	112.6
Infectious and parasitic---	15.9	48.1	23.6	8.9	4.7	-	-
Upper respiratory---	112.1	241.7	124.2	75.5	77.7	74.8	23.3
Other respiratory---	50.8	46.5	61.2	50.7	54.2	37.6	23.3
Digestive system---	16.7	18.1	18.9	17.5	15.9	14.2	9.2
Fractures, dislocations, sprains, and strains---	6.0	1.2	6.1	6.2	6.0	7.1	19.1
Open wounds and lacerations---	14.0	11.2	14.8	17.8	15.0	12.9	(*)
Contusions and superficial injuries---	9.1	9.6	10.1	13.3	7.2	7.0	9.2
Other current injuries-	7.2	9.7	7.8	7.3	6.7	6.9	-
All other acute conditions---	41.8	65.2	44.1	44.4	39.1	19.7	24.1

crease in age was particularly marked for acute upper respiratory conditions and for the group of infectious and parasitic conditions, which includes measles, chickenpox, and other common childhood diseases. Age distributions of other acute illnesses and injuries differed according to the type of condition and the population most subject to risk. For example, wounds and lacerations were frequent in the working ages and were almost 3 times as high among males as among females (table 11). For all injuries combined, persons in the age group 15-24 had the highest in-

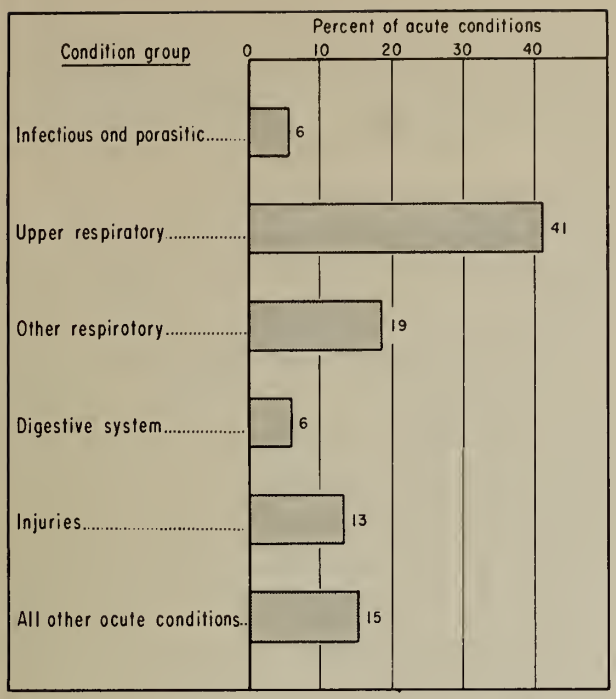


Figure 5. Percent distribution of all acute conditions occurring during the year according to type of condition.

cidence, 44.6 per 100 persons, but for the group "fractures, dislocations, sprains, and strains," elderly people had the highest rate.

In all of the disease groups shown, and particularly for digestive illnesses, females had a higher incidence of acute illness than males. However, in all of the injury groups, except "contusions and superficial injuries" males had appreciably higher rates.

The general pattern of distribution of acute illnesses and injuries by type, age, and sex, described for Hawaii, follows the pattern for the mainland. However, during the time periods covered, October 1958-September 1959 for Hawaii and July 1958-June 1959 for the mainland, the total incidence of acute illnesses and injuries was considerably higher in Hawaii, 274 cases per 100 persons, than on the mainland, 215 per 100 persons. The difference was not entirely due to the higher proportion of children in Hawaii, for it existed in each age group except 65 and older. In particular, the rate of occurrence of injuries was high among children, and of acute respiratory conditions among adults in Hawaii, as compared with the mainland. These and other differences should be examined and interpreted in the light of local factors with respect to the occur-

Table 11. Annual incidence of acute conditions according to condition group by sex: Oahu, Hawaii, October 1958-September 1959

Condition group	Number of acute conditions			Rate per 100 persons		
	Both sexes	Male	Female	Both sexes	Male	Female
All conditions	1,264,000	542,100	721,900	273.7	250.6	294.0
Infectious and parasitic	73,500	31,500	42,000	15.9	14.6	17.1
Upper respiratory	517,800	220,300	297,500	112.1	101.8	121.2
Other respiratory	234,600	87,900	146,700	50.8	40.6	59.7
Digestive system	77,100	25,300	51,700	16.7	11.7	21.1
Fractures, dislocations, sprains, and strains	27,600	15,100	12,400	6.0	7.0	5.1
Open wounds and lacerations	64,700	45,800	18,900	14.0	21.2	7.7
Contusions and superficial injuries	42,100	19,400	22,700	9.1	9.0	9.2
Other current injuries	33,500	21,700	11,800	7.2	10.0	4.8
All other acute conditions	193,300	75,100	118,200	41.8	34.7	48.1

rence of acute conditions during the survey year, as well as in relation to the structure of the population.

Acute Conditions[2] contains detailed information on the occurrence of acute conditions in the United States, exclusive of Hawaii and Alaska, during the period July 1958-June 1959.

Chronic Conditions

It has been pointed out that chronic illness data obtained from household interviews may differ considerably from chronic illness data obtained from medical examinations. In medical studies illness is detected through recognized diagnostic tests and clinically significant symptoms. In household interviews respondents report information received from the physician, or in the absence of medical attention, they may report symptoms or conditions referable to a certain part of the body rather than to a specific diagnostic category. Furthermore, a person cannot be expected to report in an interview a condition of which he is unaware, but such a condition may be detectable by clinical examination.

The prevalence of chronic conditions, as estimated from the Hawaii Health Survey, should be regarded as the prevalence of conditions that respondents knew about and were willing to report. Conditions which had been seen recently or repeatedly by a physician, or which had resulted in some form of disability, were probably reported completely. Also conditions which usually have readily recognizable symptoms or cause physical distress were probably well reported.

A chronic condition, in this survey, was defined as any of the conditions on Cards A or B shown in Appendix III, or any condition which had been first noticed more than 3 months before the week of interview. As previously mentioned, the reported chronic conditions were considered to be present as of the date of interview, and therefore statistics from the survey measure average prevalence at any point of time during the year rather than at a specific calendar date.

All conditions, except impairments, were coded according to the International Classification of Diseases, 1955 Revision with certain minor modifications. Impairments were coded according to a Supplementary Impairment code developed by the Public Health Service. The assigned codes were regrouped for tabulating to provide broader categories of chronic conditions, and those shown in this report have been selected from these categories. Additional information on coding of conditions is contained in Part II of this report in the section "Medical Coding." A complete description of the Supplementary Impairment code is contained in National Health Survey Report, Series B, No. 9, listed on the inside of the back cover of this report.

The groups of chronic conditions shown in table 12 are selected from a longer list. The selection was made on the basis of public health importance and also with a view to exclusion of those types of conditions for which reporting is believed to be less reliable in household interview surveys. Also excluded were those types of chronic diseases that show up only rarely in a sample of the population.

Cases which were reported as not seen by a physician, for example, 17 percent of the cases of arthritis and rheumatism (table 12), must be viewed with some doubt as to their diagnostic accuracy. Some of the medically unattended cases represent the householders' attempts at self-diagnosis, but others were perhaps recognized correctly through education or previous family experience.

[2] U.S. National Health Survey. Acute Conditions, Incidence and Associated Disability, United States, July 1958-June 1959. Health Statistics. Series B-18. Public Health Service Publication No. 584-B18. Public Health Service, Washington, D. C.

Table 12. Number of chronic conditions reported in interviews and number and percent within each group seen by a physician by condition group: Oahu, Hawaii, October 1958-September 1959

Condition group	All reported cases	Cases seen by physician	
		Number	Percent
Heart condition	5,700	5,600	99.4
High blood pressure	11,000	11,000	98.8
Asthma-hay fever	35,800	31,100	87.0
Chronic bronchitis	4,800	4,700	97.1
Chronic sinusitis	14,700	12,200	83.1
Hernia	2,200	2,200	97.0
Peptic ulcer	3,100	3,100	100.0
Diabetes	4,900	4,900	100.0
Arthritis and rheumatism	10,200	8,500	83.3
Hearing impairments	10,300	8,000	77.7
Visual impairments	4,500	4,200	91.7
Impairment,* back or trunk	11,000	8,600	78.4
Impairment,* upper extremity, shoulder	3,100	2,700	85.7
Impairment,* lower extremity, hip	5,700	5,000	88.7

*Not including absence or paralysis.

The prevalence of each of the selected chronic conditions is shown according to age in table 13. Where frequencies were low in certain age groups, the number and rate are not shown. The frequencies in these cells were judged to be unreliable, as indicated by the sampling errors which are shown in the tables of Appendix 1. Some of the other frequencies in themselves also have high sampling errors, but they are shown because the rates derived from the sample are reasonable in the light of knowledge concerning the age and sex distributions of the conditions.

By far the most frequent type of chronic condition reported on Oahu was asthma-hay fever. This group contained cases of asthma, asthma with hay fever, and hay fever without asthma, but excluded cardiac asthma and pneumoconiotic asthma. The frequency of hay fever is underestimated, and is not shown separately, because cases with both asthma and hay fever were coded to the asthma category by the provisions of the International Classification of Diseases. Asthma, with or without hay fever, represented 48 percent of the total cases in the group. The highest rate of asthma-hay fever was in persons under 25 years of age who accounted for 65 percent of the cases. The rate of 94 per 1,000 persons in this age group was considerably higher than on the mainland where the corresponding rate was 47 per 1,000.*

The second most frequently reported chronic condition in Hawaii, among those shown, was sinusitis, with a rate of 32 per 1,000 persons. Since 17 percent of the cases had never been seen by a physician it is quite possible that unattended cases of "sinus trouble" included some self-diagnosed upper respiratory conditions other than chronic sinusitis. The highest prevalence of sinusitis was among adults from 25 to 44 years of

*Estimates of the prevalence of chronic conditions for the United States, July 1958-June 1959 have not been published. Figures for the mainland quoted in this section are based upon combined data for the two years, July 1957-June 1959. Estimates of the prevalence of certain types of chronic conditions are given in U. S. National Health Survey Reports, Series 8, Numbers 9, 12, and 13 listed on the inside of the back cover of this report.

Table 13. Number of chronic conditions and rate per 1,000 persons per year reported in interviews according to condition group by age: Oahu, Hawaii, October 1958-September 1959

Condition group	Age				
	All ages	Under 25	25-44	45-64	65+
	Number of chronic conditions				
Heart conditions	5,600	1,000	1,600	2,100	1,000
High blood pressure	11,000	600	2,700	5,400	2,300
Asthma-hay fever	35,800	23,200	9,200	2,900	500
Chronic bronchitis	4,800	3,300	900	500	(*)
Chronic sinusitis	14,700	3,800	8,000	2,500	400
Hernia	2,200	700	500	700	300
Peptic ulcer	3,100	(*)	1,900	700	300
Diabetes	4,900	(*)	900	2,800	1,100
Arthritis and rheumatism	10,200	500	2,800	4,300	2,600
Hearing impairments	10,300	2,500	3,000	2,300	2,500
Visual impairments	4,500	800	800	1,700	1,200
Impairment,* back or trunk	11,000	1,000	5,400	3,400	1,100
Impairment,* upper extremity, shoulder	3,100	600	1,100	1,100	(*)
Impairment,* lower extremity, hip	5,700	1,500	2,100	1,400	700
	Rate per 1,000 persons				
Heart conditions	12.2	4.0	11.8	33.7	52.4
High blood pressure	23.9	2.4	20.4	86.1	122.3
Asthma-hay fever	77.5	94.2	68.7	45.5	27.7
Chronic bronchitis	10.4	13.4	6.5	8.0	(*)
Chronic sinusitis	31.9	15.6	59.6	40.1	20.2
Hernia	4.8	2.9	4.0	10.5	16.8
Peptic ulcer	6.8	(*)	14.3	11.7	16.3
Diabetes	10.6	(*)	6.4	45.0	58.3
Arthritis and rheumatism	22.0	2.1	20.7	68.1	139.0
Hearing impairments	22.4	9.9	22.9	36.4	135.3
Visual impairments	9.8	3.4	5.9	26.3	66.6
Impairment,* back or trunk	23.8	4.2	40.7	53.7	59.4
Impairment,* upper extremity, shoulder	6.7	2.3	8.4	18.2	(*)
Impairment,* lower extremity, hip	12.3	6.2	15.8	21.7	35.7

*Not including absence or paralysis.

age, and the rate decreased in older ages. This is a pattern which has been observed in other interview surveys. This condition has a higher prevalence on the mainland than on Oahu.

The prevalence of bronchitis was somewhat higher, 13 per 1,000, among persons under 25 years of age than in other age groups, where the rate remained fairly constant at about 7 to 8 cases per 1,000 persons.

Hernias and peptic ulcers followed an age pattern in Hawaii that is typical of the United States. That is, the prevalence was low in the youngest age group, was materially higher among middle-aged adults, but in the oldest ages never reached the high rates that occur for many of the other chronic conditions.

Among those chronic conditions, other than impairments, which are most prevalent among

older people, diabetes had a high rate in Hawaii. Although the prevalence of reported cases in all ages was only slightly higher than on the mainland, for ages 45 and older the rate from the Hawaii Survey was 48 per 1,000 as contrasted with 26 per 1,000 from the National Health Survey.

About 17 percent of the cases of arthritis and rheumatism were reported as having never been seen by a physician. Therefore a certain proportion of these self-diagnosed cases would not have been clinically identifiable as arthritis or rheumatism. The rate for these conditions, as reported in Hawaii, followed the typical pattern of increase with age that has been observed in other studies, but the prevalence per 1,000 persons in each age group 25 years and over was only about half as high as that for the mainland.

As would be expected, the prevalence of heart conditions and high blood pressure also increased with age. The provisions for coding these two groups of conditions in the International Classification of Diseases should be explained. High blood pressure, where concurrent with a heart condition, is coded to the heart condition code number; that is, the two conditions are merged. Because of this, the group called "heart conditions" in this report includes heart conditions with or without high blood pressure. By the same token, the group called "high blood pressure" does not include a complete count of all cases, but only those without a concurrent heart condition.

Prevalence rates for high blood pressure were, age for age, very close to those estimated for the mainland. This was true also for heart conditions up to the age of 45, but in the age group 45-64 the rate on Oahu was about 34 per 1,000 persons as compared with 54 per 1,000 on the mainland. In the oldest age group, 65 and over, the rate was about 52 on Oahu and 149 on the mainland. The net result of these differences is that the crude prevalence rate of heart conditions reported in interviews was 12 per 100 on the Island and 30 in the United States, exclusive of Hawaii and Alaska. On the mainland, heart conditions and high blood pressure were reported with almost equal frequency, whereas on Oahu heart conditions were reported with only about half the frequency of high blood pressure.

The presence of hearing defects was elicited largely by the Check List of Impairments, Card B, which asked about "deafness or serious trouble with hearing." No attempt was made in the questionnaire to define precisely the degree of severity, although reports of total deafness were coded as a separate category. All cases of hearing defects reported in the interview were included in the category shown in tables 12 and 13.

Defects of vision were similarly reported in response to the item about "serious trouble with seeing, even with glasses." Reported eye conditions which did not impair vision, or refractive errors which resulted in no defective vision when corrected by glasses, were not coded as impairments, and such conditions are not included in the frequencies shown in the visual impairment group in tables 12 and 13. Reports of blindness, and positive responses to the question "Can you read ordinary newspaper print with glasses?" were used to classify persons as having severe visual impairment. Since the small frequencies did not permit separate tabulation, such persons are included in the group shown, along with the others having lesser defects of vision.

Orthopedic impairments are shown in three broad groupings according to the part of the body affected. These impairments include deformities and limitation of motion of limbs or back. However, absence of extremities and paralysis are excluded. Orthopedic impairments are reported in a wide variety of terms, such as "crippled," "twisted," or "short" to indicate an anatomical abnormality, or "stiff," "painful," or "trouble" to describe difficulty in lifting or movement. From

10 to 20 percent of these conditions had not been seen by a physician, and most of such cases were described in terms of symptoms. Reported symptoms were not classified as impairments, however, unless they had existed for 3 months or longer.

The groups titled "Impairment of upper extremity or shoulder," and "Impairment of lower extremity or hip," do not include impairments of the extremities which are also associated with impairments of the back, spine, or trunk. The group titled "Impairment of the back or trunk' includes all reported back, spine, or trunk impairments or defects, and multiple impairments which also involved the limbs.

The sensory defects of hearing and vision are most prevalent in the older age groups, whereas, the orthopedic impairments, relatively speaking, have high prevalence rates among younger adults. This is particularly true for the large group of impairments which includes the back, where about 41 conditions were reported for every 1,000 persons between 25 and 44 years of age and 54 conditions per 1,000 persons between 45 and 64 years.

Within any one of the groups of chronic conditions listed it can be assumed that the frequency represents an estimate of the number of persons with that particular condition. However, since a person often reported more than one type of condition, the addition of several groups would not give a true estimate of the unduplicated number of persons having these conditions. The total number of chronic conditions reported in the survey was 240,500. The number of persons reporting 1 or more chronic conditions was 151,900 or a ratio of 1.6 conditions reported by each person who reported at least 1 chronic condition. On the mainland the corresponding ratio was 1.8, which is indicative of the generally lower prevalence of chronic conditions among older persons in Oahu, as well as the lower proportion of older persons in the population.

Figure 6 shows for Oahu, and for the mainland, the percent of persons reporting one or more chronic conditions by age groups. As would be expected, in both locations the proportion of persons with chronic conditions increased with age. There is little, if any, difference in the younger age groups, but at older ages Oahu has a considerably lower proportion of chronically

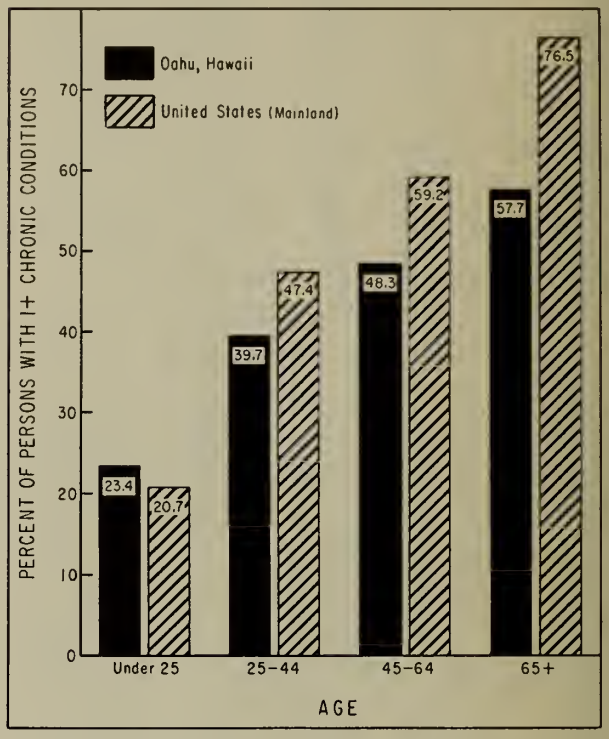


Figure 6. Proportion of persons in each age group who reported one or more chronic conditions.

ill persons than the mainland. A more detailed age grouping at older ages would somewhat reduce the apparent difference because even within the broad groups shown persons on Oahu have a lower average age.

Chronic Limitations

One of the purposes of the Hawaii Health Survey was to measure the extent of disability due to ill health. In the survey the word "disability" is used to denote any degree or type of long-

term or short-term interference with a person's activities. This section of the report concerns disability in the sense of long-term interference, termed "chronic limitation," and includes chronic limitation of activity and chronic limitation of mobility.

It should be recalled that the survey did not include persons in institutions. Since many of these institutions contain persons who are chronically disabled, the statistics in this section do not present complete counts of all chronically limited persons on the Island, but rather those who are not institutionalized.

For each person for whom a chronic condition was reported, the respondent was shown one of the Cards C through F, reproduced in Appendix III, and was asked which statement on the card best fitted the limitation status of that person. The cards varied in wording depending upon the usual activity of the person who was being inquired about, but the categories of limitation listed on the cards were consistent in that each card determined 4 broad limitation groups:

1. Persons who were completely unable to engage in the usual activities of working, keeping house, going to school, normal play, or other activities appropriate to that person.

2. Persons who were able to engage in these activities, but on a restricted basis, such as working only part time or at only certain types of jobs, keeping house on a limited scale, going to special schools, or engaging only in restricted types or amount of play.

3. Persons who could participate fully in major activities, but who had limitations involving ordinary functions of living, such as shopping, sports, or social activities.

4. Persons who had no limitations, although they were reported to have one or more chronic conditions.

Table 14 shows, in broad age classes, the number of persons in the population, the number for whom no chronic conditions were reported, and the number with one or more chronic conditions. This last group is subdivided into persons with no chronic limitations and those with limitations of increasing degrees of severity. In essence, the table scales the population with respect to chronic illness and long-term disability.

The percent distributions of table 14 reveal that about 1 person in 100 was unable to carry on major activities and about 4 in 100 were either unable to carry on, or partially limited in, major activities. If the age groups 25-44 and 45-64 are combined, considering these to be the productive years of life as a worker or a homemaker, about 5 percent of the persons in these age groups were partially limited in, or unable to carry on, major pursuits. The proportion limited in these ways was higher (22 percent) in the age group 65 years and over. On the mainland the corresponding proportion among persons 65 years of age and over was 35 percent. In the younger age groups, below 45, the proportion of persons limited in activities was about the same on Oahu as on the mainland.

Statistics on chronic limitations of activity and mobility for the United States, exclusive of Hawaii and Alaska, are presented in the National Health Survey Report, Series B, Number 11. This publication refers to the year July 1957-June 1958.

Whenever a person was reported to be limited in activity in any degree, the respondent was asked about mobility limitations. It was determined from responses to Card G (Appendix III) whether the person was confined to the house, not confined but needed help outside, did not need help but had trouble getting around alone, or was not limited in mobility. Due to the low frequency of persons who were confined to the house, this group has been combined in table 15 with those who needed help in getting around outside.

The age pattern with respect to chronic mobility limitations is similar to that for activity

Table 14. Number and percent distribution of persons according to limitation of activity due to chronic conditions by age: Oahu, Hawaii, October 1958-September 1959

Limitation of activity	Age				
	All ages	Under 25	25-44	45-64	65+
	Number of persons				
All persons	461,900	246,700	133,400	63,200	18,600
With no chronic conditions	310,000	189,000	80,400	32,700	7,900
With 1+ chronic conditions	151,900	57,700	53,000	30,500	10,700
No limitation of activity	128,100	51,900	46,600	23,800	5,800
Limited but not in major activity	7,100	2,600	2,300	1,200	900
Partially limited in major activity	12,900	2,600	3,800	3,900	2,600
Unable to carry on major activity	3,800	500	300	1,500	1,500
	Percent distribution				
All persons	100.0	100.0	100.0	100.0	100.0
With no chronic conditions	67.1	76.6	60.3	51.7	42.3
With 1+ chronic conditions	32.9	23.4	39.7	48.3	57.7
No limitation of activity	27.7	21.1	34.9	37.7	30.9
Limited but not in major activity	1.5	1.1	1.7	2.0	5.0
Partially limited in major activity	2.8	1.1	2.9	6.2	13.8
Unable to carry on major activity	0.8	0.2	0.3	2.5	8.0

Table 15. Number and percent distribution of persons according to limitation of mobility due to chronic conditions by age: Oahu, Hawaii, October 1958-September 1959

Limitation of mobility	Age				
	All ages	Under 25	25-44	45-64	65+
	Number of persons				
All persons	461,900	246,700	133,400	63,200	18,600
With no chronic conditions	310,000	189,000	80,400	32,700	7,900
With 1+ chronic conditions	151,900	57,700	53,000	30,500	10,700
No mobility limitation	145,700	56,800	51,900	28,600	8,400
Trouble getting around alone	3,400	400	800	1,000	1,200
Confined or needs help	2,800	400	300	900	1,100
	Percent distribution				
All persons	100.0	100.0	100.0	100.0	100.0
With no chronic conditions	67.1	76.6	60.3	51.7	42.3
With 1+ chronic conditions	32.9	23.4	39.7	48.3	57.7
No mobility limitation	31.6	23.0	38.9	45.3	45.3
Trouble getting around alone	0.7	0.2	0.6	1.7	6.3
Confined or needs help	0.6	0.2	0.2	1.4	6.2

limitations. In the youngest ages, under 45, about 0.2 percent of the population was either confined to the house or needed help outside, a rate which was approximately the same as for the mainland. From 45 to 64 years of age, 1.3 percent were limited in this way as compared with 1.6 percent on the mainland. The proportion confined to the house or needing help among older persons, 65 years or more, was 6.1 percent on Oahu and 8.6 percent on the mainland.

Figure 7 shows the percent of persons on Oahu who had any degree of activity limitation or

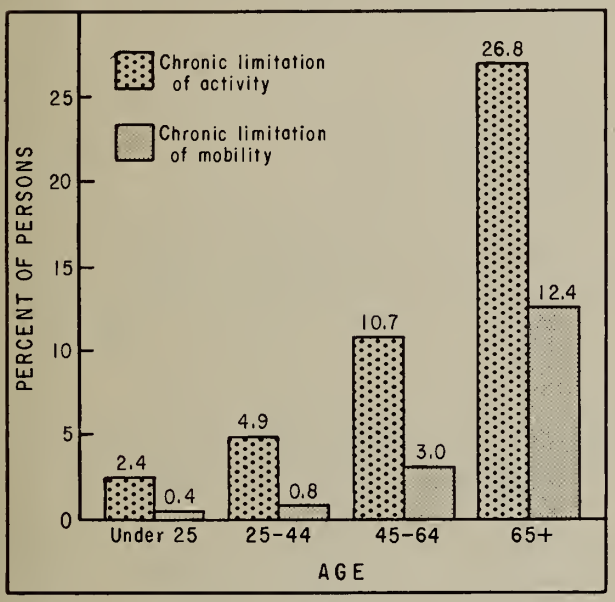


Figure 7. Percent of persons with any degree of chronic limitation of activity or of mobility according to age.

any degree of mobility limitation. Up to 45 years of age one sixth of the persons with a limitation of activity were also limited in mobility. From 45 to 64 years of age the corresponding ratio was about one third, and for persons 65 and over it was approximately one half, indicating the greater severity of chronic disability as age increases.

Disability Days

Estimates of the number of days of disability were obtained from the survey. Two types of disability days—restricted activity and bed disability—apply to the population as a whole and will be described in this section. A restricted-activity day is a day during which a person cuts down on his usual activities for that particular day because of illness or injury. It includes a day lost from work or school, or sickness in bed, as well as any day on which lesser restriction of usual activity was necessary. Restricted-activity days represent the most inclusive survey measure of the impact of illness, disease, and injury on the population.

The population of Oahu had a total of 5,380,700 days of restricted activity during the survey year, or an average of about 12 days per person (table 16). The number of days per person was slightly higher for females than for males, a difference accounted for largely by the excess of days for females between the ages of 25 and 44. For all persons, the age distribution of restricted-activity days per person was roughly U-shaped, being high in the youngest and oldest age groups. The pattern was similar for males, but for females was interrupted by the high rate in the 25-44 year age group.

Bed-disability days, shown in table 17, constituted about 43 percent of the days of restricted activity. A bed-disability day was defined in the survey as a day on which the person spent all or most of the day in bed because of acute or chronic conditions. A day spent in a hospital was considered to be a day of bed disability even if the person was not actually in bed at the hospital. This, of course, excludes persons in institutions who were not included in the sample.

Over 2 million days of bed disability were incurred in the year by the civilian noninstitutional population of Oahu, a rate of 5.0 bed-days per person. As in the case of restricted-activity days, females averaged a greater number of bed-disability days than males. Bed disability also followed the same general trend with age that was seen for restriction of activity.

Table 16. Number of restricted-activity days and number of restricted-activity days per person per year by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of restricted-activity days			Restricted-activity days per person per year		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages-----	5,380,700	2,310,800	3,070,000	11.7	10.7	12.5
Under 5----------	914,900	468,900	446,000	12.7	13.2	12.2
5-14----------	1,258,800	614,400	644,400	10.9	10.9	10.9
15-24----------	569,200	220,700	348,500	9.7	9.2	10.0
25-44----------	1,560,800	413,700	1,147,100	11.7	7.4	14.8
45-64----------	769,800	436,800	333,100	12.2	12.5	11.8
65+----------	307,100	156,300	150,800	16.5	16.1	17.0

Table 17. Number of bed-disability days and number of bed-disability days per person per year by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of bed-disability days			Bed-disability days per person per year		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages-----	2,299,100	1,023,700	1,275,500	5.0	4.7	5.2
Under 5----------	429,200	225,200	204,000	6.0	6.3	5.6
5-14----------	561,000	272,600	288,400	4.8	4.8	4.9
15-24----------	281,700	108,700	173,000	4.8	4.5	5.0
25-44----------	594,200	172,500	421,700	4.5	3.1	5.4
45-64----------	309,300	178,300	131,000	4.9	5.1	4.6
65+----------	123,600	66,300	57,300	6.6	6.8	6.5

The sex distribution of disability days on the mainland was similar to that on Oahu; that is, females on the mainland had a higher rate per person per year (6.6 bed-disability days) than did males (4.9 days), and the largest difference between males and females was in the ages 25-44. Although on Oahu the rate for both sexes was 5.0 bed-days per person, and on the mainland 5.8, the rate in children under 5 years of age was higher on Oahu, 6.0, than on the mainland where the rate was 4.6 bed-disability days per person. Among younger adults the rates were similar for the two locations but, in the older age groups the rate of disability was much higher on the mainland. For example, among persons over 65 years of age the bed-disability rate was about 12 days per person on the mainland and 6.6 days on Oahu. Differences similar to those described above for bed-disability days also existed for restricted-activity days.

The days of restricted activity and bed disability reported in the foregoing description may be referred to as "person days of disability," since they are unduplicated days attributable to the person, irrespective of the number of acute

or chronic conditions stated to be responsible for the days. For each condition reported, the respondent was asked whether that particular condition caused the person to cut down on his activities or to stay in bed. These days are referred to as "condition days." Occasionally, and particularly for multiple chronic conditions, a respondent stated that a particular day of disability was caused by more than one condition, and the day was attributed to each of the conditions.

Because of the procedure described above, the days shown for the conditions in table 18 should not be added together since duplication would result. It is appropriate, however, to divide the total person-days shown in tables 16 or 17 by the days of disability for a particular condition to obtain the proportion of days attributable in whole or in part to that condition.

The number of disability days for a certain condition may be divided by the number of conditions of that type. The statistics which result, the average number of days per year per case, are shown graphically for bed-disability days due to selected chronic conditions (fig. 8). This procedure may be applied also to acute conditions, but it should be recalled that the number of acute conditions estimated from the survey includes only those which had medical attention, or days of restricted activity. Furthermore, the concept of the statistic in relation to acute conditions

Table 18. Number of disability days and average number of persons each day with disability by selected condition groups: Oahu, Hawaii, October 1958-September 1959

Selected condition groups	Number of conditions	Restricted-activity days	Bed-disability days	Average number of persons each day	
				With restricted activity	With bed disability
Chronic conditions					
Heart condition	5,700	136,800	75,100	375	206
High blood pressure	11,000	50,700	28,500	139	78
Asthma-hay fever	35,800	329,600	137,400	903	376
Chronic bronchitis	4,800	59,800	50,800	164	139
Chronic sinusitis	14,700	42,900	24,300	118	67
Peptic ulcer	3,100	20,600	16,400	57	45
Diabetes	4,900	33,400	8,400	91	23
Arthritis and rheumatism	10,200	187,600	66,700	514	183
Acute conditions					
Infectious and parasitic	73,500	290,500	108,700	796	298
Upper respiratory	517,800	994,600	439,400	2,725	1,204
Other respiratory	234,600	1,022,000	569,500	2,800	1,560
Digestive system	77,100	175,600	109,300	481	299
Fractures, dislocations, sprains, and strains	27,600	169,100	33,000	463	90
Open wounds and lacerations	64,700	124,600	26,000	341	71
Contusions and superficial injuries	42,100	112,400	44,900	308	123
Other current injuries	33,500	86,400	26,200	237	72

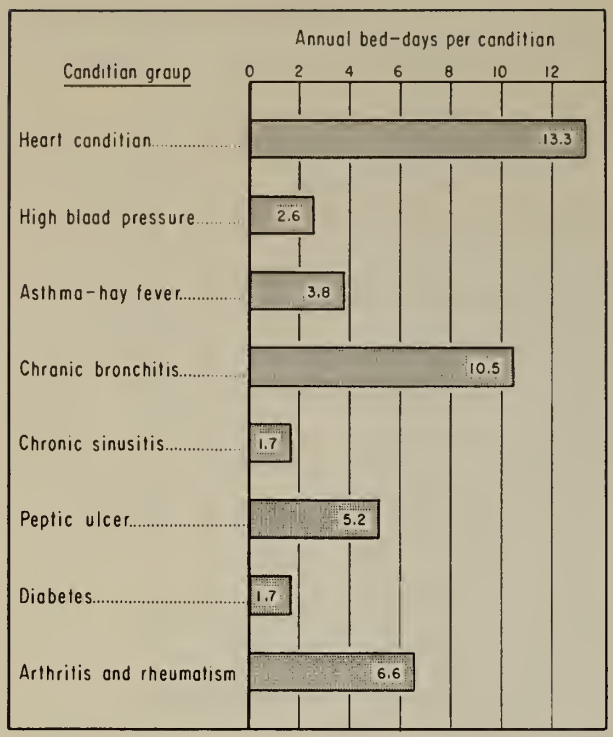


Figure 8 Average annual number of bed-disability days per case for selected chronic conditions.

would be somewhat different from its application to chronic conditions because of the generally short duration of acute illnesses or injuries. The ratio would measure the average number of disability days per episode of acute conditions which were seen by a physician or caused restricted activity.

The figures in table 18 indicate the relative impact of various types of conditions on the population in terms of days of disability. The last two columns represent the average number of persons who, on a single day, cut down on their usual activities or spent most of the day in bed because of the specified condition. These figures were obtained by dividing the total annual disability days for the condition group by 365. The figures for acute illnesses and injuries are shown for comparative purposes, although it is recognized that disability days for acute conditions are more subject to seasonal variation than are days associated with chronic illnesses, and are therefore less evenly distributed throughout the year. Of course the average number of persons with a disability each day does not provide a measure of the seriousness of the various types of conditions to the individual, but only of the relative volume in the population.

Persons Injured

This section of the report contains estimates of the number of persons who were injured during the year covered by the Hawaii Health Survey. It includes only persons who received injuries that were of enough consequence to require medical attention or to cause the person to cut down on his usual activities for at least a day. The data cannot be used to estimate the number of accidents that occurred, since the survey was based upon information about individual persons. Many accidents involve several persons, while others result in no injury.

The estimates for the year were derived by accumulating reports of persons injured during the two weeks prior to the week of interview. Since information concerning deceased persons was not obtained in the survey, persons who were injured, but who died in the two weeks before the interview are excluded from the data.

Definitions of terms relating to persons injured are given in Appendix II. Since these terms have specialized meanings for the purposes of the survey, familiarity with them is necessary for correct interpretation of the findings. The statistics presented in the tables will not necessarily agree with estimates from other sources, which employ different definitions, inclusions, or concepts.

Within the civilian noninstitutional population of Oahu there were 160,500 persons injured, as defined by the foregoing description. About 100,000 of these persons were males and 60,000 were females. Table 19 shows that these figures represent 463 persons injured per 1,000 males and 246

Table 19. Number of persons injured and rate per 1,000 persons by age and sex: Oahu, Hawaii, October 1958-September 1959

Age	Number of persons injured			Rate per 1,000 persons		
	Both sexes	Male	Female	Both sexes	Male	Female
All ages----------	160,500	100,200	60,300	347	463	246
Under 5----------	22,800	10,600	12,300	317	296	337
5-14----------	44,400	28,300	16,100	383	501	271
15-24----------	25,300	19,900	5,400	431	834	155
25-44----------	45,700	26,200	19,400	342	470	250
45-64----------	17,000	13,400	3,600	269	384	127
65+----------	5,200	1,700	3,500	282	179	395

per 1,000 females. The data indicate that there is a difference in the age distributions of persons injured among males and females. For example, the rate per 1,000 males increases during childhood to a high at ages 15-24 years, and then successively decreases in later years of age. On the other hand, the number of persons injured per 1,000 females appears to be somewhat lower in the middle years of age than in childhood or in the older ages. This age-sex pattern is consistent with findings for the mainland, based upon National Health Survey data for the year July 1957-June 1958 (National Health Survey Report, Series B, Number 8).

A special caution is in order concerning the possible effects of sampling error on the statistics presented. Although the data may be used to judge the general magnitude and over-all distribution of persons injured, no special significance should be attached to a specific figure for the frequency or rate in any one age-sex category.

The total frequency, and the frequency for males, are large enough to indicate that the rate of persons injured on Oahu is higher than on the mainland. In all, there were 347 persons injured per 1,000 population on Oahu, and 279 per 1,000 on the mainland. For males, the respective rates were 463 and 331 per 1,000. For males, and for both sexes combined, the higher rates from the Hawaii Health Survey were consistent throughout all age groups.

Table 20 classifies persons injured according to broad classes of accidents that caused the injury or injuries sustained. In this table, as in the preceding one, no persons were included unless the injury entailed medical attention or restriction of activity. In the survey, the class of accident termed "motor vehicle involved" included any accident in which a motor vehicle was responsible as an agent of injury. This class was not restricted to moving motor vehicles nor to persons who were occupants of motor vehicles. The motor vehicle may have been in a garage, on a public street, highway, private drive, or any other location. Persons injured "while at work" were at the location of their job or business, but the injury may or may not have been related to their duties and did not necessarily result in time lost from work. Persons injured in the "home" included those injured in their own homes or on the premises, or at the homes of other persons.

The class, "public places and other," was largely composed of persons injured in public places, but persons were included in this cate-

Table 20. Number of persons injured and rate per 1,000 persons by sex and class of accident: Oahu, Hawaii, October 1958-September 1959

Class of accident	Number of persons injured			Rate per 1,000 persons		
	Both sexes	Male	Female	Both sexes	Male	Female
All classes	160,500	100,200	60,326	347	463	246
Motor vehicle involved*	7,100	4,500	2,500	15	21	10
While at work*	29,800	24,200	5,500	64	112	22
Home*	79,700	39,200	40,500	173	181	165
Public places and other	50,200	35,800	14,400	109	165	59

*Persons injured in each class of accident will not add to all classes because of duplication between groups.

gory only in instances where the accident was not classifiable to one of the three categories above. Also included were persons having adverse reactions to medical procedures, such as to vaccinations; persons with effects of exposure to weather, such as severe sunburn; and persons subjected to nonaccidental violence, such as assault. In the same group in table 19 were persons injured, for whom insufficient information was obtained to place them in one of the first three classes. These cases classified as unknown constituted 6 percent of the total persons injured.

It was possible for persons to be injured in accidents which involved more than one of the classes listed; for example, in motor vehicle accidents while at work. Except for the class "public places and other," such persons were included in each category which applied, motor vehicle, home, or while at work, so that the total frequency for each class could be shown. Because of the duplication, the figures shown by class of accident in table 19, if added together, would slightly exceed the total persons injured.

Accidents which involved a motor vehicle accounted for about 5 percent of the total persons injured in the year. This represented about 15 persons injured per 1,000 population; 21 per 1,000 males and 10 per 1,000 females. These figures are underestimates to the extent that they do not include persons who died immediately or within two weeks following the accident, as explained early in this section. This exclusion may have a proportionately greater effect on the rate of persons injured in motor vehicle accidents than in other classes, since a higher proportion of motor vehicle accidents may be immediately fatal.

Although the persons injured in accidents which involved motor vehicles constituted only about 5 percent of the total, the proportion of disability due to this class of accident was undoubtedly much higher. In the National Health Survey, July 1958-June 1959, persons injured in motor vehicle accidents amounted to 8 percent of those in all classes of accidents, whereas they accounted for about 20 percent of the bed-disability days of persons injured.

By far the greatest number of persons injured at work were males. The rate of persons injured per 1,000 was also higher for males than for females, although for the latter, the rate is based upon a frequency that is subject to a high probability of error due to sampling. On the mainland, where the rate of persons injured at work was 55 per 1,000, the rate for males was 96 per

1,000 and, for females, 16 per 1,000. The higher rate for males injured at work is undoubtedly due to differences in risk of injury in the types of work engaged in by men and by women.

On Oahu, and also on the mainland, about half of all persons injured were involved in accidents in or around the home. Figure 9 shows that on Oahu home injuries were about equally divided between males and females. The difference in rates of males and females injured in home accidents (table 19) may be due only to chance in the selection of the sample. The rate for both sexes, 173 per 1,000, is higher than the corresponding figure, 131 per 1,000, for persons injured in home accidents on the mainland.

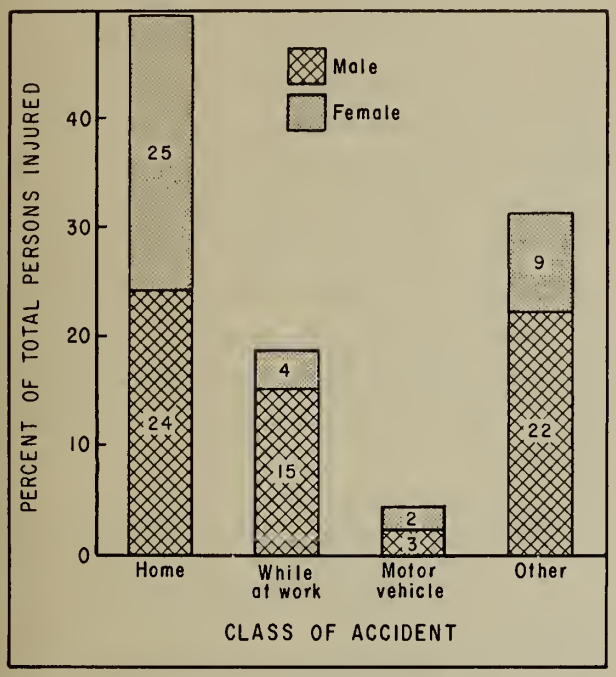


Figure 9. Percent of total persons injured in each sex and class of accident group.

The frequency of persons injured in public places or in accidents not included in any of the other categories was twice as high among males as among females. On both Oahu and the mainland, the class "public places and other" constituted about 30 percent of all injuries, but the rate was higher on Oahu, 109 per 1,000 persons, than on the mainland where it was about 80 per 1,000.

In summary, the incidence of persons injured to the extent of requiring medical attention or restricting their activities was about 20 percent higher on Oahu than on the mainland. Most of the excess was in the adult male population and was occasioned by all classes of accidents except those involving motor vehicles.

PART II
DESIGN AND METHODS

THE SURVEY DESIGN

The statistical design for the Hawaii Health Survey was prepared co-operatively by the U. S. National Health Survey and the Bureau of the Census. It was a modification of the design employed in the continuing operations of the National Health Survey and, as such, drew heavily from designs previously developed by the Bureau of the Census for its Current Population Survey. Details of the National Health Survey sample design may be found in Public Health Service Publication Number 584-A2, "The Statistical Design of the Health Household-Interview Survey." The general features of this design, as modified for the Hawaii Health Survey, are presented in this section.

The Island of Oahu was treated as a single primary sampling unit in Hawaii. This was subdivided geographically into a number of enumeration districts (ED's) of varying sizes and classified as central city ED's, urbanized fringe ED's, other urban ED's, and rural ED's. By use of detailed maps each ED was subdivided into units, called segments, each expected to contain 6 households. All of the households in the selected seg-

ments were interviewed. If it developed that a selected segment contained more than 20 households it was subsampled so that approximately 6 households were interviewed.

In the selection process the enumeration districts were arranged in sequence, by degree of urbanization, and segments within the ED's were systematically numbered for the entire Island. In keeping with the sample design, 520 segments were drawn to obtain about 3,000 households. Starting with a random segment number, it and every n^{th} segment was drawn, where n represented the ratio of the total number of segments to the number of sampled segments.

In order to facilitate continuous collection of data from independent samples for shorter periods of time, while at the same time permitting cumulation of data for the year, the annual sample was first divided into quarterly samples by taking every fourth one of the selected segments. The quarterly sample was the basic sample of the survey. Subsequent selection from the quarterly samples of segments yielded weekly random samples of the population. The effect of this process was that each weekly sample was representative of the total population and of the major geographic and population density sectors. Weekly samples were additive to the quarter and quarterly samples to the year.

Prior to the time of interviewing, prelisting was conducted in the selected segments as described by the listers' instructions: "Write on prepared forms the addresses or other descriptions of all places where people live or might live, including such places as ordinary house dwellings, apartments, duplexes, trailers, tents, houseboats, converted boxcars, and rented rooms, including everything which lies inside the defined segment." The instruction was supported and amplified by maps and a 93-page indexed listing manual. The prelisting process provided the principal basis for completeness of coverage, but another check was done at the time of interview. The listing also furnished information for subsampling in segments with large numbers of dwelling units, preparation of segment maps for the interviewers, and for central office processing controls.

A typical weekly assignment for an interviewer was 2 segments or an expected 12 households, but each interviewer did not have an assignment every week. In the interest of operating efficiency, and reduction of variance and bias, it was desirable to randomize assignments, interviewers, weeks, and areas throughout each quarter. The process by which this was accomplished is too detailed to describe here, but an example of a similar process has been presented in Public Health Service Publication No. 584-A2 referred to earlier.

CONTROL AND EVALUATION OF FIELD PROCEDURES

In any sample survey which employs interview methods there are two broad categories of error. One of these is the error that may arise by chance from the use of a sample of persons rather than a complete count. The sampling error is determined by the survey sample design, discussed above. Estimates of the sampling variability for the Hawaii Health Survey have been computed and tables of sampling errors are shown in Appendix I. The second broad category may be called measurement error, which is unaffected by the size of the sample. One aspect of the control of measurement error—control and evaluation of field procedures—is described in this section.

Among the many risks of measurement error are those that may arise from faulty concepts, lack of precision in definitions, and ambiguities or poor design of the questionnaire. The concepts and definitions used in the Hawaii Health Survey had behind them a considerable volume of experience. Many of them had been used in local

and State studies even prior to their inclusion in the National Health Survey. In the latter survey the questions were pretested, placed in the field for a trial period, and subsequently used on a national scale for 15 months prior to the Hawaii Survey. Field trials were also conducted on Oahu, by the Hawaii staff, for a period of 4 weeks before starting on the survey sample.

Methodological studies and questionnaire reviews are a continuing part of the National Health Survey program. They are needed to evaluate the degree to which the responses yield, or fail to yield, data that are consistent with the concepts and definitions used, and to correct any deficiencies observed. Such studies are made from special tabulations or from reviews of original questionnaires, samples of which are regularly received by the Public Health Service for this purpose. The basic information from the Hawaii questionnaire was subjected to the same evaluative procedures as that for the mainland.

Another phase of control of interview bias was the training of personnel and review of their work. The Bureau of the Census supervisor for the Hawaii Health Survey had been formally trained, and was thoroughly experienced in survey supervisory work. Interviewers were required to qualify on an initial selection examination, followed by an intensive period of training and a 4-week trial of field procedures. During the survey year several means were employed to assure a continued high level of interviewer performance, and in connection with each, the interviewers were informed of their errors and instructed in correcting them. The following is a description of these procedures:

1. A regular program of observation was conducted in which the field supervisor accompanied the interviewers on a certain proportion of assignments.

2. The supervisor conducted independent reinterviews in about 8 percent of all households at times and locations unknown to the original interviewers. The reinterviews provided checks on population coverage within the segment and within households, and also checks on the completeness and accuracy of demographic and health information obtained.

3. Interviewers received monthly home training exercises on the use of the questionnaire and field techniques. These exercises were returned to the office for review.

4. During central office processing, all questionnaires were tabulated for interviewer errors of question coverage and inconsistencies. These tabulations, and also noninterview rates, were periodically sent to the supervisor for discussion with the field staff.

All of the training, observation, and review procedures were oriented to a 175-page Interviewers' Manual which included instructions about the questionnaire, interviewing techniques, and adequacy of population coverage. The manual was carried on all assignments and used as a constant reference, thus helping to standardize performance among interviewers.

Certain problems of respondent bias were discussed in Part I of this report. The questions about the composition of the household were asked of any "responsible" adult member of the household, that is, a person living in the household who was either 18 or more years of age, or married, and who was mentally competent to answer. This same person was considered an acceptable respondent for the facts concerning the age, sex, marital status, and other characteristics of all persons related to him. The following rules applied in this part of the interview:

1. Information about adults was supplied by the person himself, the spouse, a parent, or an adult son or daughter residing in the household.

2. Information about children was supplied by a parent unless some other adult was usually responsible for the care of the child.

3. No person was asked to supply information about a person unrelated to himself; hence, a servant or a lodger, for example, was interviewed for himself unless there was a relative in the household who could answer for him.

In the parts of the interview dealing with illness, medical and dental care, and hospitalization, the same rules regarding the acceptability of respondents applied, with one additional rule; each adult at home at the time of the interview was interviewed for himself. If a particular adult was not at home, then the rules for acceptability of respondent stated above were followed.

If no acceptable respondent for a particular member of the household was at home at the time of the interview, the interviewer completed the questioning for all persons for whom there was an acceptable respondent, and made arrangements to call again to finish the interviewing for that household. Thus, the rules which the interviewer followed in accepting "proxy respondents" put a premium on close relationship. The rules were more stringent for the health and medical care information than for the demographic particulars, not solely because the health and medical care data were the main object of the interview; these data were also more personal and less likely to be known to a husband, wife, sister, or brother.

Insistence upon self respondents throughout the survey would have been highly expensive because of the need for revisits to the household. The rules adopted were judged to provide the best respondent for the resources available.

PROCESSING OF DATA

Questionnaires were transmitted weekly from the Hawaii field supervisor to the Bureau of the Census in Washington, D.C., where checks were made for completeness of field coverage, as determined from the enumeration of households during the prelisting operation referred to in the section entitled "Sample Design."

The next operation was the coding of the content of the questionnaire onto document sensing cards. The code categories for health and medical care items were established by the National Health Survey in order to maintain consistency with the concepts and definitions, and to fulfill the requirements for statistical information on health topics. Illnesses, diseases, and injuries were coded according to the International Classification of Diseases, 1955 Revision, with certain modifications. The processes used in connection with medical coding will be described in a separate section. The code categories for demographic and economic items had, in most cases, been established by the Bureau of the Census to conform with the classifications used in other survey operations of that Bureau.

During the basic coding operations, the questionnaires were reviewed for internal inconsistencies and for omissions. Corrections were made for obvious errors in location of entries on the questionnaire, but all evident interviewer errors were coded for tabulation and transmission to the field office. The coding process itself was also routinely subjected to quality control procedures by means of independent duplicate processing of samples of questionnaires. Coders were required to maintain proficiency within established standards of tolerance.

Upon completion of all coding of each week's work to the document sensing cards, the data were transcribed to punch cards by machine. The punch cards were then checked for errors of coding omissions or duplications, and were returned for correction. Corrected decks of punch cards were next transcribed to UNIVAC tape. The Bureau of the Census carried out the foregoing procedures as well as the computation of estimates of sampling errors for various types and magnitude of statistics.

Utilizing Bureau of the Census electronic computers, the Public Health Service carried out

a number of steps to prepare the data tapes for tabulations. Among these were the following:

1. Assignment of weights and related procedures necessary to produce estimates for the population of Oahu.

2. Combining of weekly and quarterly data into annual data, and accomplishing other steps of data rearrangement.

3. Regrouping or combining certain coded information for the purpose of facilitating later tabulation procedures. A simple example is the regrouping of codes by single years of age into the several age groupings most frequently employed.

4. Carrying out a procedure of internal edits and consistency checks between various items of data which were not subject to review in earlier editing stages. The objective was to insure that data were not incorrect through mistakes in entries by the interviewers or coders. No editing procedure could be expected, nor was intended, to remove errors in reporting by the respondents.

From the finished data tapes, the final step was to produce tabulations, and subsequently rates and other statistical measures, that would have meaning for users of the data.

MEDICAL CODING

Translating replies of respondents into specific code categories is a relatively difficult stage of processing, particularly in medical coding, which is the assignment of codes for morbidity conditions. For this reason, methods employed in medical coding are described separately, although they were an integral part of the processing procedure described above.

The basic classification used in medical coding was the International Classification of Diseases, 1955 Revision. However, two principal modifications to this system, which were used for the Hawaii Health Survey, as for the National Health Survey, may be described as follows:

1. Certain additional code numbers were "created" into which could be coded responses frequently given in the general terminology of household respondents, and which otherwise would have been "forced" into code numbers for more specific disease classifications.

2. Impairments, which occur under various classifications of the International system, were not coded by that system, but were coded by a Supplementary Impairment Code developed by the Public Health Service.

During the year July 1957-June 1958 all medical coding for the National Health Survey was done independently by two coders and differences were resolved by a medical coding expert. Records of medical coding errors, and the results of independent evaluative studies, showed that error rates were low enough to permit sample verification, with tolerance limits, during the following year of the National Health Survey and for the Hawaii Health Survey.

Medical coding was done initially to 4 digits of detail because of the availability of a standard published code index which could be used. However, neither the precision with which household respondents could report morbidity conditions, nor the size of the sample, warranted tabulation of the data in the detail to which it was coded. Consequently the conditions were grouped, during preparation of the data tapes, to provide the classifications from which the Hawaii tabulations were made. The consolidated groupings are referred to as "recodes." The Hawaii tabulations employed a number of different types of recodes, and in varying degrees of detail, depending upon the purposes. For example, separate classifications were provided for acute conditions, injuries, chronic conditions, conditions causing hospitalization, and types of operations. The data presented in Part 1 of this report included fur-

ther consolidations from the acute condition recode, and selected conditions from the chronic condition recode. The condition groups used in the present report are described below and listed with the equivalent code numbers of the International Classification of Diseases or the Supplementary Impairment Code.

Chronic Conditions

Conditions were classified as chronic if they were reported in terms of one of the conditions on Cards A or B, shown in Appendix III. Conditions other than those on the cards were classified as chronic only if the date of onset was 3 months or more prior to the week of the interview (see definition in Appendix II). These primary requirements were met for all chronic conditions tabulated in the Hawaii Health Survey. Estimates from other studies are not comparable with those from this survey unless these criteria, as well as the equivalent code numbers are employed.

Chronic Disease Group	International Classification, 1955 Code Numbers
Heart conditions	410–443
High blood pressure	444–447
Asthma–hay fever	240–241
Chronic bronchitis	502
Chronic sinusitis	513
Hernia	560–561
Peptic ulcer	540–542
Diabetes	260
Arthritis and rheumatism	720–727

The following chronic conditions, included in the data presented in this report, were coded by the Supplementary Impairment Code (National Health Survey Report, Series B, Number 9).

Impairment Group	Supplementary Impairment Code Numbers
Hearing impairments	X06–X09
Visual impairments	X00–X05
Impairment of back or trunk	X70–X72; X78–X81; X89
Impairment of upper extremity or shoulder	X73–X74; X86–X88
Impairment of lower extremity or hip	X75–X77; X82–X85

Acute Conditions

In the Hawaii Health Survey all conditions were classified as acute if they did not meet the definition for chronic conditions. Therefore, all acute conditions had their onset less than three months prior to the week of interview.

For purposes of estimating the incidence of acute conditions, only those which had their onset during the two weeks prior to the week of interview, and which also entailed medical attention or restriction of activity, were included in the tabulations.

The code numbers listed were used to classify acute conditions shown in this report, but tabulations were subject to the requirements set forth above.

Acute Condition Group	International Classification, 1955 Code Numbers
Infectious and parasitic	021–138
Upper respiratory	470–475; 517
Other respiratory	480–501; 518–527; 783
Digestive system	530–587; 784; 785
Fractures, dislocations, sprains, and strains	800–848
Open wounds and lacerations	870–885; 890–895; 900–908
Contusions and superficial injuries	910–929
Other current injuries	850–869; 930–994; 996–999
All other acute conditions	All other acute code numbers

ESTIMATING METHODS

The sample design was such that each household and person on Oahu had an equal chance of inclusion in the interviewing. Thus it was possible to compute an estimate of any specified health characteristic by multiplying the sample aggregate of that characteristic by the reciprocal of the common sampling fraction, or probability of inclusion in the sample of a single person.

The above step was carried out, but an improved final estimate, with smaller sampling variation, was obtained by use of a ratio-estimating technique. The technique is described by the equation

$$y'' = \frac{y'}{x'} x$$

where x is an independent population control estimate (obtained from Hawaii authorities), y' is the sample estimate of the health characteristic, x' the corresponding sample estimate of the population, and y'' the final estimate of the health characteristic. In the Hawaii Health Survey, the sample population estimate differed from the independent control population estimate by less than two percent.

As noted earlier, each week's sample represented the population living during that week, and the characteristics of that population. Consolidation of weekly samples for the year produced estimates of average characteristics of the Oahu population for that year.

For prevalence statistics, such as the number of persons with chronic limitation of activity, figures for the year are averages of the estimates for all weeks of interviewing in the year. For other types of statistics, which measure the number of occurrences during a specified time period—such as number of visits to a physician, days of disability, or incidence of acute illnesses—a similar procedure is used, but the statistics have a different interpretation. For these items, the questionnaire asks for the respondent's experience during the two calendar weeks prior to the week of interview. In these cases the estimated annual total is simply 26 times the average two-week estimate produced by the 52 successive samples during the year.

Data were adjusted for nonresponse by a procedure which imputed to persons in a household not interviewed the characteristics of persons in households which were interviewed in the same segment. The total noninterview rate was 4 percent; 1 percent was refusal, and the remainder was accounted for by other reasons, such as failure to locate any household respondent during repeated visits.

The original tabulations, on which data presented in Part I of this report are based, show all estimates to the nearest whole units. All consolidations were made from the original tabulations using the estimates to the nearest unit. In the final published tables, the figures are shown to the nearest hundred or thousand, although they are not necessarily accurate to that detail. Derived statistics, such as rates and percent distributions, were computed from unrounded frequencies.

Since the estimates from the survey are based on a sample, they will differ somewhat from the figures that would have been obtained if a complete census had been taken using the same schedules, instructions, and interviewing personnel and procedures. The reliability of the estimates, except for biases in the information received, is measured by the standard error of those estimates. Appendix 1 contains guides and tables for estimating the standard errors of aggregates, rates, and percents shown in this report.

APPENDIX I

SAMPLING ERRORS

The standard error is primarily a measure of sampling variability, that is, the variations around the true value that might occur by chance because only a sample of the population is surveyed. As calculated for this report, the standard error also reflects part of the variation which arises in the measurement process. It does not include estimates of any biases which might lie in the data. The chances are about 68 out of 100 that an estimate from the sample would differ from the value obtained by a complete census by less than the standard error. The chances are about 95 out of 100 that difference would be less than twice the standard error and about 99 out of 100 that it would be less than 2½ times as large.

In order to derive standard errors which would be applicable to a wide variety of health statistics and which could be prepared at a moderate cost, a number of approximations were required. As a result, tables I through IV, included in this Appendix, should be interpreted as providing an estimate of approximate standard error rather than as the precise standard error for any specific aggregate or percentage.

Two classes of statistics for the health survey are identified for purposes of estimating variances.

Narrow range.—This class consists of (1) statistics which estimate a population attribute—i.e., number of persons with a specified characteristic, for example, the number of persons with heart conditions, and (2) statistics for which the measure for a single individual for the period of reference in the questionnaire is usually either the value 0 or 1, but on occasion may take on the value 2, or very rarely in excess of 2.

Wide range.—This class consists of statistics for which the measure for a single individual for the period of reference in the questionnaire will range from 0 to a number frequently in excess of 5, for example, the number of restricted-activity days.

Sampling errors for Narrow- and Wide-range statistics were read from curves which have been fitted to computed standard errors for a number of appropriate items for four quarters of sampling.

In addition to classifying variables according to whether they are Narrow or Wide range, two other classes of statistics are defined in the survey:

Type I consists of statistics on prevalence, and of statistics for which the period of reference in the questionnaire is 12 months, for example: the number of persons having a hearing impairment, or the number of hospital days during the past year.

Type II consists of statistics for which the period of reference in the questionnaire is two weeks, for example: the number of dental visits.

General rules for determining sampling errors.—The "guide" on page 39, together with the following rules, will enable the reader to determine sampling errors from tables I through IV for the following types of statistics from the survey:

1. Estimates of aggregates: Approximate standard errors of estimates of aggregates, such as the number of persons with a given characteristic, number of visits, or number of disability days, are obtained from the appropriate columns of tables I or II.
2. Estimates of percentage in a percent distribution: Standard errors of percentages in a percent distribution of the total are obtained from tables III or IV.
3. Estimates of rates where the numerator is a subclass of the denominator: This rule applies for prevalence rates or where a unit of the numerator occurs, with few exceptions, only once in the year for any one unit in the denominator. For example, a person with peptic ulcers would rarely have more than one type of peptic ulcer; therefore the rate of peptic ulcers per 1,000 persons falls in this class. Such rates, if expressed as rates per 100 may be treated as though they were percentages, and the standard errors may be obtained from table III or table IV as appropriate. Note that a rate per 1,000, or on any other base, must first be converted to a rate per 100; then tables III or IV will provide the standard error of the rate per 100.
4. Estimates of annual rates where the numerator is not a subclass of the denominator: This rule applies where a unit of the numerator often occurs more than once in the year for any one unit in the denominator. For example, a person might have several days of restricted activity in the year; therefore restricted-activity days are not unduplicated in the population during a year, and cannot be treated as though they were a subclass or percentage of the population, as in rule 3 above. Approximate standard errors for rates of this class may be obtained as follows:
 (a) Find the standard error of the numerator of the rate from table I and divide it by the numerator itself. Square the result.
 (b) Find the standard error of the denominator of the rate from table I and divide it by the denominator itself. Square the result.
 (c) Add the answers from steps (a) and (b) above and extract the square root.
 (d) Multiply the answer from step (c), above, by the rate. The result is the approximate standard error of the rate. This procedure normally gives an overestimate of the true sampling error.
5. Difference between two rates: The approximate standard error of the difference between two rates is obtained by taking the square root of the sum of the squares of the standard error of each rate.

Guide to use of standard error tables

For standard errors of	Use: Rule	Table	Type
Persons			
number of persons	1	I	I
percent of persons	2	III	I
Physician or dental visits			
number of visits	1	I	II
percent of total visits	2	III	II
$\frac{\text{visits}}{\text{population}}$	4	*	*
Hospital discharges			
number of discharges	1	I	I
percent of discharges	2	III	I
$\frac{\text{hospital discharges}}{\text{population}}$	3	III	I
number of hospital days	1	II	I
percent of hospital days	2	IV	I
$\frac{\text{number of hospital days}}{\text{number of discharges}}$	4	*	*
Acute conditions of any one type			
number of acute conditions	1	I	II
percent of acute conditions	2	III	II
$\frac{\text{acute conditions}}{\text{population}}$	4	*	*
Chronic conditions			
number of chronic conditions	1	I	I
percent of chronic conditions	2	III	I
$\frac{\text{chronic conditions of any one type}}{\text{population}}$	3	III	I
persons with 1+ chronic conditions	1	I	I
$\frac{\text{chronic conditions}}{\text{persons with 1+ chronic conditions}}$	3	III	I
Persons with chronic limitations			
number with limitations	1	I	I
percent with limitations	2	III	I
$\frac{\text{persons limited}}{\text{population}}$	3	III	I
$\frac{\text{persons limited}}{\text{persons with 1+ chronic conditions}}$	3	III	I
Disability days			
number of disability days	1	II	II
percent of disability days	2	IV	II
$\frac{\text{disability days}}{\text{population}}$	4	*	*
$\frac{\text{condition-disability days}}{\text{person-disability days}}$	3	IV	II
$\frac{\text{chronic condition disability days}}{\text{chronic condition of same kind}}$	4	*	*
$\frac{\text{acute condition disability days}}{\text{acute conditions of same kind}}$	4	*	*
Persons injured			
number of persons injured	1	I	II
percent of persons injured	2	III	II
$\frac{\text{persons injured}}{\text{population}}$	4	*	*

*For a rate to which rule 4 applies, the table numbers and types of statistics are those listed for the numerator and denominator of the rate.

Table I. Standard errors of aggregates for Narrow-range characteristics

Size of estimate	Standard error	
	Type I	Type II
500	270	...
1,000	400	...
2,500	600	...
5,000	800	...
10,000	1,200	6,000
25,000	2,000	10,000
50,000	3,000	13,000
100,000	4,000	20,000
250,000	6,000	30,000
500,000	...	45,000
750,000	...	55,000
1,000,000	...	60,000
2,500,000	...	100,000

Illustration of use of table I.—This illustration is also an example of the use of rule 4. There were 8.6 physician visits per person per year among children under age 5. The guide shows that rule 4 applies to this type of rate; that the standard error of number of visits is obtained from table I, type II; and that the standard error of population comes from table I, type I. There were 620,000 physician visits of children under age 5. Reading from table I, an estimate of 500,000 physician visits has a standard error of 45,000, and 750,000 physician visits has a standard error of 55,000. By interpolation between these figures, 620,000 physician visits has a standard error of about 50,000 visits. Dividing 50,000 by 620,000 yields 0.0806, which is the relative standard error of the physician visits. The square of this is 0.0065.

There were 72,100 children under age 5. Again interpolating in table I, this population has a standard error of about 3,400 persons. Dividing 3,400 by 72,100 gives a relative standard error of 0.0472. The square of this is 0.0022.

Adding the squares of the relative standard errors, taking the square root gives 0.0933. This, multipiled by the rate, 8.6 physician visits per person, gives a figure of 0.8 visits per person as the standard error of the rate.

Table II. Standard errors of aggregates for Wide-range characteristics

Size of estimate	Standard error	
	Type I	Type II
500	425	...
1,000	600	...
2,500	1,000	...
5,000	1,400	...
10,000	2,000	9,000
25,000	3,500	15,000
50,000	6,000	20,000
100,000	10,000	30,000
250,000	20,000	50,000
500,000	40,000	75,000
750,000	60,000	100,000
1,000,000	...	120,000
2,500,000	...	240,000
5,000,000	...	400,000

Illustration of the use of table II.—This illustrates also the use of rule 1. There were 272,600 bed-disability days among males 5-14 years of age. The guide indicates the use of table II, type II. The table shows that 250,000 days has an approximate standard error of 50,000 and that 500,000 days has a standard error of 75,000. By interpolation, an estimate of 272,600 days has a standard error of about 52,000 days.

Table III. Standard errors of percentages for Narrow-range characteristics

Base of percentage		Estimated percentage			
Type I	Type II	2 or 98	10 or 90	25 or 75	50
10,000	250,000	0.9	1.9	2.8	3.2
20,000	500,000	0.6	1.4	1.9	2.3
30,000	750,000	0.5	1.1	1.6	1.9
50,000	1,250,000	0.4	0.8	1.2	1.4
100,000	2,500,000	0.3	0.6	0.9	1.0
200,000	5,000,000	0.2	0.4	0.6	0.7
300,000	...	0.2	0.4	0.5	0.6
500,000	...	0.1	0.2	0.4	0.5

Illustration of the use of table III.—This illustration is also an example of the use of rule 3. In the age group 45–64 there were an estimated 5,400 persons partially or completely limited in major activities, in a total of 63,200 persons in the age group, a rate of 8.7 per 100. Since the limited persons are a subclass of the population, rule 3 applies for estimating the standard error of the rate. The guide indicates the use of table III, type I. Interpolating between 50,000 and 100,000 gives a figure of 0.374 as the standard error of 2 percent on a base of 63,200. Interpolating again gives 0.748 as the standard error of 10 percent on a base of 63,200. A final interpolation between 0.374 and 0.748 gives a standard error of 0.7 per 100 for an estimated rate of 8.7 per 100. For most purposes, a simple scanning of the table will give an approximate answer that is satisfactory (in illustration for table IV).

Table IV. Standard errors of percentages for Wide-range characteristics

Base of percentage		Estimated percentage			
Type I	Type II	2 or 98	10 or 90	25 or 75	50
50,000	1,250,000	1.0	2.3	3.3	3.8
100,000	2,500,000	0.8	1.6	2.3	2.7
200,000	5,000,000	0.5	1.1	1.7	1.9
300,000	7,500,000	0.4	0.9	1.3	1.6
500,000	...	0.3	0.7	1.0	1.2

Illustration of the use of table IV.—Males 25–44 years of age had 413,700 restricted-activity days or 18 percent of the 2,310,800 restricted-activity days for males of all ages. To find the standard error of this percentage, the guide indicates the use of table IV, type II. Scanning of table IV shows that the standard error of 10 percent on a base of 2,300,000 is about 1.7 percent. Similarly, the standard error of 25 percent on the same base is about 2.5 percent. Interpolating roughly between 1.7 and 2.5 gives approximately 2.1 percent as the standard error of 18 percent.

APPENDIX II

DEFINITIONS OF CERTAIN TERMS USED IN THE HAWAII HEALTH SURVEY

The Contents of the List of Terms

No hard and fast rules were followed in the selection of terms to be included in the following list. However, certain types of terms have, in general, been excluded:

1. Terms of principal interest in connection with the methodology of the survey, such as "noninterview," "acceptable respondent," and so forth. Although these terms may occasionally be used in reports on results of the survey, it was not considered necessary to provide formal definitions.
2. Terms for any rates or ratios or other indices the meaning of which was believed to be self-evident from the context.
3. Terms in wide usage were excluded unless they have been given a specialized meaning in the survey or unless some special point regarding the classification needed exposition.

Demographic, Social, and Economic Terms

Age.—The age recorded for each person is the age at last birthday. Age is recorded in single years and grouped in a variety of distributions depending upon the purpose of the table.

Race.—In the Hawaii Health Survey race is recorded as "Caucasian," "Japanese," or "Other." "Other" includes Filipino, Chinese, Hawaiian, and others not stated by the respondent to be Caucasian or Japanese.

Marital status.—Marital status is recorded only for persons 14 years of age or older. The categories of marital status are: married, widowed, divorced, separated, and never married. Persons whose only marriage was annulled are counted as "never married." Persons with common-law marriages are considered to be married. "Separated" refers to married persons who have a legal separation or who have parted because of marital discord.

Education of family head or of unrelated individuals.—Each member of a family is classified according to the education of the head of the family of which he is a member. Within the household all persons related to each other by blood, marriage, or adoption constitute a family. Unrelated individuals are classified according to their own education.

The categories of educational status show the highest grade of school completed. Only grades completed in regular schools, where persons are given a formal education, are included. A "regular" school is one which advances a person toward an elementary or high school diploma, or a college, university, or professional school degree. Thus, education in vocational, trade, or business schools outside the regular school system is not counted in determining the highest grade of school completed.

Income of family or of unrelated individuals.—Each member of a family is classified according to the total income of the family of which he is a member. Within the household all persons related by each other by blood, marriage, or adoption constitute a family. Unrelated individuals are classified according to their own income.

The income recorded is the total of all income received by members of the family (or by an unrelated individual) in the 12-month period ending with the week of interview. Income from all sources is included, e.g., wages, salaries, rents from property, pensions, help from relatives, and so forth.

Veteran status.—In order to establish veteran status, information is secured concerning service in the Armed Forces. The information is obtained only for males 14 years of age and over. The categories of service in the Armed Forces include the following: no military service, peacetime service only, Spanish-American War service, World War I service, World War II service, Korean conflict service, and military service, period unknown.

Service in the Armed Forces means active duty for any time at all in the U. S. Army, Navy, Air Force, Marine Corps, or Coast Guard. Peacetime service in the Merchant Marine, in a National Guard unit, or in active reserve training is not considered to be service in the Armed Forces.

In cases of service in more than one war, the man is classified according to the latest war in which he served.

When males 14 years of age and over are grouped into two classes, veterans and nonveterans, men with peacetime service only are included with those having no military service as nonveterans.

Major activity.—All persons 6 years old or over are classified according to their major activity during the 12-month period prior to the week of interview. The "major" activity, in case more than one is reported, is the one at which the person spent the most time during the 12-month period.

The categories of major activity are: usually working, usually going to school, usually keeping house, retired, and other. For several reasons these categories are not comparable with somewhat similarly named categories in official Federal labor force statistics. In the first place, the responses concerning major activity are accepted without detailed questioning, since the objective of the question is not to estimate the numbers of persons in labor force categories but to identify crudely certain population groups which may have differing health problems. In the second place, the figures represent the major activity over the period of an entire year, whereas official labor force statistics relate to a much shorter period, usually one week. Finally, in the definitions of the specific categories which follow, certain marginal groups are classified in a different manner to simplify the procedures.

1. Usually working includes paid work as an employee for someone else; self-employment in own business, or profession, or in farming; and unpaid work in a family business or farm. Work around the house, or volunteer or unpaid work, such as for church, Red Cross, etc., is not counted as working.
2. Usually going to school means attendance at a regular school or college which advances a person toward an elementary or high school diploma or a college degree.
3. Usually keeping house includes any activity described as "keeping house" which cannot be classified as "working" or "going to school."
4. Retired includes persons 50 years old or over who consider themselves to be retired. In case of doubt, a person 50 years old or over is counted as retired if he, or she, has either voluntarily or involuntarily stopped working, is not looking for work, and is not described as "keeping house." A retired person may or may not be unable to work.
5. Other includes persons 6 years of age or over not classed in any of the other categories. Examples of inclusions are: a person who states that he spent most of the past 12 months looking for work, a person doing volunteer work only, a person under 50 years of age who describes himself as "retired" or "taking it easy," a person under 50 years of age who is described as "unable to work," or "unable to go to school," or a person 50 years of age or over who describes himself as "unable to work" and is not "retired."

Location of Residence Terms

Urban residence.—The definition of urban areas used in the Hawaii Health Survey is the same as that used in the 1950 Census. According to this definition, the urban population comprises all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, towns and villages; (b) incorporated towns of 2,500 inhabitants or more; (c) the densely settled urban fringe, including both incorporated and unincorporated areas around cities of 50,000 or more; and (d) unincorporated places of 2,500 inhabitants or more outside any urban fringe.

Rural residence.—The remaining population not classified as "Urban" is classified as "Rural." In this report the rural population has been subdivided into "Rural farm" and "Rural nonfarm."

Rural farm.—All rural residents living on farms or plantations are classified as "Rural farm." In deciding whether members of a household reside on a farm or plantation, the statement of the household respondent that the house is on a farm or plantation is accepted, with the following exception. A house occupied by persons who pay cash rent for the house and yard only is not counted as a farm or plantation even though the surrounding area is farm land. This special case does not cover: (1) the living quarters of a tenant farmer who rents farm land as well as house and yard; (2) the quarters of a hired hand who receives living quarters on a farm as part of his compensation; or (3) separate living quarters inside a structure which is classified as on a farm. In all these cases the living quarters are counted as on a farm.

Rural nonfarm.—The remaining rural population not classified as "Rural farm" is classified as "Rural nonfarm."

Terms Defining Morbidity Conditions

Condition.—A morbidity condition, or simply a condition, is any entry on the questionnaire which describes a departure from a state of physical or mental well-being. It results from a positive response to one of a series of "illness-recall" questions (11-17, Appendix III). In the coding and tabulating process, conditions are selected or classified according to a number of different criteria, such as, whether they were medically attended; whether they resulted in disability; whether they were acute or chronic; or according to the type of disease, injury, impairment, or symptom reported. For the purposes of each published report or set of tables, only those conditions recorded on the questionnaire which satisfy certain stated criteria are included.

Conditions, except impairments, are coded by type according to the International Classification of Diseases, with certain modifications adopted to make the code more suitable for a household-interview-type survey. For the Hawaii Health Survey, the 1955 Revision of the International Classification was used. Impairments are coded according to a special Supplementary Code.

Chronic condition.—A condition is considered to be chronic if (1) it is described by the respondent in terms of one of the chronic diseases on the "Check List of Chronic Conditions" or in terms of one of the types of impairments on the "Check List of Impairments" shown as cards A and B in Appendix III, or (2) the condition is described by the respondent as having been first noticed more than 3 months before the week of the interview.

Chronic effect or residual of injury.—A chronic condition resulting from an injury may be either an impairment, such as paralysis, or some other type of late effect of the injury, such as arthritis. Disability from such conditions is included with that resulting directly from the injuries, unless otherwise specified.

With a few exceptions, injuries that are still giving trouble are classified according to the chronic effect of the injury if the injury occurred 3 months or more before the interview week, but to the injury itself if the injury occurred less than 3 months before.

Impairment.—Impairments are chronic or permanent defects, usually static in nature, resulting from disease, injury, or congenital malformation. They represent decrease or loss of ability to perform various functions, particularly those of the musculoskeletal system and the sense organs. All impairments are classified by means of a special supplementary code for impairments. Hence, code numbers for impairments in the International Statistical Classification are not used. In the Supplementary Code impairments are grouped according to the type of functional impairment and etiology.

Acute condition.—All conditions not classed as chronic are considered to be acute. Minor acute conditions, both diseases and injuries, involving neither restricted activity nor medical attendance, are excluded from the statistics. (See definitions of "Restricted-activity day" and "Medically attended condition.")

Injury condition.—An injury condition, or simply an injury, is an acute condition of the type that is classified to the nature of injury code numbers (N800-N999) in the International Classification of Diseases. In addition to fractures, lacerations, contusions, burns, and so forth, which are commonly thought of as injuries, this group of codes include: effects of exposure, such as sunburn; adverse reactions to immunizations and other medical procedures; and poisonings. Unless other-

wise specified, the term injury is used to cover all of these.

As in the case of other acute conditions, acute injury conditions involving neither restricted activity nor medical attendance are excluded from the statistics.

Terms Relating to Conditions

Prevalence of conditions.—In general, prevalence of conditions is the estimated number of conditions of a specified type existing at a specified time or the average number existing during a specified interval of time.

The prevalence of chronic conditions denotes the number of chronic cases reported to be present or assumed to be present at the time of interview; those assumed to be present at the time of the interview are cases described by the respondent in terms of one of the chronic conditions on the "Check List of Chronic Conditions" and reported to have been present at some time during the 12-month period prior to the interview.

Estimates of the prevalence of chronic conditions may be restricted to cases that satisfy certain additional stated criteria, such as, for example, cases involving a day or more in bed in the past year, or cases still under medical care.

Incidence of conditions.—Incidence of conditions is the estimated number of conditions of a specified type which had their onset within a specified interval of time. In this survey the interval was one year, or annual incidence.

Onset of condition.—A morbidity condition, whether acute or chronic, is considered to have had its onset when it was first noticed. This could be the time the person first felt "sick," or became injured, or it could be the time the person or his family was first told by a physician that he had a disease of which he was previously unaware. For a chronic condition, episodic in nature, the onset is always considered to be the original onset rather than the start of the most recent episode.

Medically attended condition.—A condition for which a physician was consulted is called a medically attended condition. Consulting a physician includes consultation in person or by telephone for treatment or advice. Advice from the physician transmitted to the patient through the nurse is counted as medical consultation as well as visits to physicians in clinics or hospitals. If at one visit the physician is consulted about more than one condition for each of several patients, each condition is counted as medically attended.

A parent consulting a physician about a child's condition is counted as medical consultation about that condition even if the child was not seen by the physician at that time.

For the purpose of this definition "physician" includes doctors of medicine and osteopathic physicians. The term "doctor" is used in the interview, rather than "physician," because of the need to keep to popular usage. However, the concept toward which all instructions are directed is that which is described here.

A condition is counted as medically attended if a physician was consulted about it at its onset or at any time thereafter. However, the first medical attention for a condition that was present in the 2 calendar weeks before the interview may not occur until after the end of the 2-week period, and, in fact, may not occur until after the interview. Such cases are necessarily treated as though there had been no medical attention.

Activity-restricting condition.—An activity-restricting condition is a condition which has caused at least 1 day of restricted activity during the 2 calendar weeks before the interview week. (See definition of "Restricted-activity day.") The incidence of acute activity-restricting conditions is estimated from the number of such conditions reported as having started in the 2-week period, but a condition starting in the 2-week period which did not result in restricted activity until after the end of that period is not included.

Bed-disabling condition.—A condition involving at least 1 day of bed disability during the 2 calendar weeks before the interview week is called a bed-disabling condition. (See definition of "Bed-disability day.") The incidence of acute bed-disabling conditions is defined in a manner analogous to the incidence of acute activity-restricting conditions.

Interval since last medical consultation for a condition.—The interval since the last medical consultation for a condition is obtained only for chronic conditions. It refers to the number of months or years prior to the week of interview since a physician was last consulted about the chronic condition. If during the course of an examination for the purpose of obtaining insurance, employment, etc., a condition was merely noted by a physician who was not giving a diagnosis, advice, or treatment, this is not counted in determining the last time a physician was consulted.

For the purposes of this definition "physician" is defined as in "Medically attended condition."

Still under care.—This information is obtained only for chronic conditions. A chronic condition which is "still under care" is one for which the person is still "under instruction" from a physician. By "under instruction" is meant one or more of the following: (1) taking certain medicine or treatment prescribed by a physician, (2) observing a certain systematic course of diet or activity, (3) visiting the physician regularly for checking on the condition, and (4) under instruction from the physician to return if some particular thing happens.

For the purposes of this definition "physician" is defined as in "Medically attended condition."

Terms Relating to Disability

Disability.—Disability is a general term used to describe any temporary or long-term reduction of a person's activity as a result of an acute or chronic condition.

Disability days are classified according to whether they are days of restricted activity, bed-days, hospital days, work-loss days, or school-loss days. All hospital days are, by definition, days of bed disability; all days of bed disability are, by definition, days of restricted activity. The converse form of these statements is, of course, not true. Days lost from work and days lost from school are special terms which apply to the working and school-age populations only, but these, too, are days of restricted activity. Hence, "days of restricted activity" is the most inclusive term used to describe disability days.

Restricted-activity day.—A day of restricted activity is a day when a person cuts down on his usual activities for the whole of that day on account of an illness or an injury. The term "usual activities" for any day means the things that the person would ordinarily do on that day. For children under school age, "usual activities" depend upon whatever the usual pattern is for the child's day which will, in turn, be affected by the age of the child, weather conditions, and so forth. For retired or elderly persons, "usual activities" might consist of almost no activity, but cutting down on even

a small amount for as much as a day would constitute restricted activity. On Sundays or holidays "usual activities" are taken to be the things the person usually does on such days—going to church, playing golf, visiting friends or relatives, or staying at home and listening to the radio, reading, looking at television, and so forth.

Restricted activity does not imply complete inactivity but it does imply only the minimum of "usual activities." A special nap for an hour after lunch does not constitute cutting down on usual activities, nor does the elimination of a heavy chore, such as cleaning ashes out of the furnace or hanging out the wash. If a farmer or housewife carries on only the minimum of the day's chores, however, this is a day of restricted activity.

A day spent in bed or a day home from work or school because of illness or injury is, of course, a restricted-activity day.

Bed-disability day.—A bed-disability day, sometimes for brevity referred to as a "bed-day," is a day on which a person was kept in bed either all or most of the day because of an illness or an injury. "All or most of the day" is defined as more than half of the daylight hours. All hospital days are included as bed-disability days even if the patient was not actually in bed at the hospital.

Work-loss day.—A day is counted as lost from work if the person would have been going to work at a job or business that day but instead lost the entire work day because of an illness or an injury. If the person's regular work day is less than a whole day and the entire work day was lost, it would be counted as a whole work day lost. Work-loss days are determined only for persons 17 years of age and over.

School-loss day.—A day is counted as lost from school if the child would have been going to school that day but instead lost the entire school day because of an illness or an injury. If the child's regular school day lasts only a part of the day and that part was lost from school, this would count as a whole day lost. School-loss days are determined only for children 6-16 years of age.

Condition-days of restricted activity, bed disability, etc.—Condition-days of restricted activity, bed disability and so forth are days of the various forms of disability associated with any one condition. Since any particular day of disability may be associated with more than one condition, the sum of days for all conditions adds to more than the total number of person-days.

Person-days of restricted activity, bed disability, etc.—Person-days of restricted activity, bed disability, and so forth are days of the various forms of disability experienced by any one person. The sum of days for all persons in a group represents an unduplicated count of all days of disability for the group.

Average number of persons with restricted activity each day.—The average number of persons with restricted activity is computed by dividing the "Person-days of restricted activity" during a period by the number of calendar days in the period. Average number with bed disability is similarly defined.

Chronic activity limitation.—Persons with chronic conditions are classified into 4 categories according to the extent to which their activities are limited at present as a result of these conditions. Since the major activities of preschool children, school-age children, housewives, and workers and other persons differ, a different set of criteria is used for each group. There is a general similarity between them, however, as will be seen in the descriptions of the 4 categories below:

1. Persons unable to carry on major activity for their group
 - Preschool children: inability to take part in ordinary play with other children.
 - School-age children: inability to go to school.
 - Housewives: inability to do any housework.
 - Workers and all other persons: inability to work at a job or business.
2. Persons limited in the amount or kind of major activity performed
 - Preschool children: limited in the amount or kind of play with other children, e.g., need special rest periods, cannot play strenuous games, cannot play for long periods at a time.
 - School-age children: limited to certain types of schools or in school attendance, e.g., need special schools or special teaching, cannot go to school full time or for long periods at a time.
 - Housewives: limited in amount or kind of housework, i.e., cannot lift children, wash or iron, or do housework for long periods at a time.
 - Workers and all other persons: limited in amount or kind of work, e.g., need special working aids or special rest periods at work, cannot work full time or for long periods at a time, cannot do strenuous work.
3. Persons not limited in major activity but otherwise limited
 - Preschool children: not classified in this category.
 - School-age children: not limited in going to school but limited in participation in athletics or other extracurricular activities.
 - Housewives: not limited in housework but limited in other activities, such as church, clubs, hobbies, civic projects, or shopping.
 - Workers and all other persons: not limited in regular work activities but limited in other activities, such as church, clubs, hobbies, civic projects, sports, or games.
4. Persons not limited in activities
 Includes persons with chronic conditions whose activities are not limited in any of the ways described above.

Chronic mobility limitation.—Persons with chronic activity limitation of some degree as a result of one or more chronic conditions are classified according to the extent to which their mobility is limited at present. There are 4 categories as follows:

1. Confined to the house—confined to the house all the time except in emergencies.
2. Cannot get around alone—able to go outside but needs the help of another person in getting around outside.
3. Has trouble getting around alone—able to go outside alone but has trouble in getting around freely.
4. Not limited in mobility—not limited in any of the ways described above.

Terms Relating to Persons Injured

Person injured.—A person injured is one who has sustained an injury in an accident, or in some type of nonaccidental violence. (See definition of "Injury condition," above.) Each time a person is injured he is included in the statistics as a separate "person injured"; hence, one person may be included more than once.

The statistics of persons injured include only persons sustaining injuries which involved at least one full day of restricted activity or medical attendance.

Note that the number of persons injured is not equivalent to the number of "accidents" for several reasons: (1) the term "accident," as commonly used, may not involve injury at all; (2) more than one injured person may be involved in a single accident so that the number of accidents resulting in injury would be less than the number of persons injured in accidents; and (3) the term "accident" ordinarily implies an accidental origin, whereas "persons injured," as used in the Hawaii Health Survey, includes persons whose injury resulted from certain nonaccidental violence.

The number of persons injured in a specified time interval is always equal to or less than the incidence of injury conditions, since one person may incur more than one injury in a single accident or nonaccidental violence.

Class of accident.—Injuries, injured persons, and resulting days of restricted activity may be grouped according to class of accident. This is a broad classification of the types of events which resulted in persons being injured. Most of these events are accidents in the usual sense of the word, but some are other kinds of mishap, such as overexposure to the sun or adverse reactions to medical procedures, and others are nonaccidental violence, such as attempted suicide. The classes of accidents are: (1) motor-vehicle accidents, (2) accidents occurring while at work, (3) home accidents, and (4) other. These categories are not mutually exclusive. For example, a person may be injured in a motor-vehicle accident which occurred while the person was at work.

Motor-vehicle accident.—The class of accident is "motor vehicle" if a motor vehicle was involved in any way. Thus, it is not restricted to moving motor vehicles or to persons riding in motor vehicles. A motor vehicle is any mechanically or electrically powered device, not operated on rails, upon which or by which any person or property may be transported or drawn upon a land highway. Any object, such as a trailer, coaster, sled, or wagon, being towed by a motor vehicle is considered a part of the motor vehicle. Devices used solely for moving persons or materials within the confines of a building and its premises are not counted as motor vehicles.

Accident while at work.—The class of accident is "while at work" if the injured person was 14 years of age or over and was at work at a job or a business at the time the accident happened.

Home accident.—The class of accident is "home" if the injury occurred either inside the house or outside the house. "Outside the house" refers to the yard, buildings, and sidewalks on the property. "Home" includes not only the person's own home but also any other home in which he might have been when he was injured.

Other.—The class of accident is "other" if the occurrence of injury cannot be classified in one or more of the first three class-of-accident categories. This category therefore includes persons injured in public places (e.g., tripping and falling in a store or on a public sidewalk), and also nonaccidental injuries such as homicidal and suicidal attempts. The survey does not cover the military population, but current disability of various types resulting from prior injury occurring while the person was in the Armed Forces is covered and is included in this class. The class also includes mishaps for which the class of accident could not be ascertained.

Medical Care Terms

Physician visit.—A physician visit is defined as consultation with a physician, in person or by telephone, for examination, diagnosis, treatment, or advice. The visit is considered to be a physician visit if the service is provided directly by the physician or by a nurse or other person acting under a physician's supervision. For the purpose of this definition "physician" includes doctors of medicine and osteopathic physicians. The term "doctor" is used in the interview, rather than "physician," because of the need to keep to popular usage. However, the concept toward which all instructions are directed is that which is described here.

Physician visits for services provided on a mass basis are not included in the tabulations. A service received on a mass basis is defined as any service involving only a single test (e.g., test for diabetes) or a single procedure (e.g., smallpox vaccination) when this single service was administered identically to all persons who were at the place for this purpose. Hence, persons passing through a tuberculosis chest X-ray trailer, by this definition, are not included as physician visits. However, a special chest X-ray given in a physician's office or an outpatient clinic is considered to be a physician visit.

Physician visits to hospital inpatients are not included.

If a physician is called to the house to see more than one person, the call is considered to be a separate physician visit for each person about whom the physician was consulted.

A physician visit is associated with the person about whom the advice was sought, even if that person did not actually see or consult the physician. For example, if a mother consults a physician about one of her children, the physician visit is ascribed to the child.

Place of visit.—The place of visit is a classification of the types of places at which a physician visit took place. (See definition of "Physician visit.") The definitions of the various categories are as follows:

1. Home is defined as any place in which the person was staying at the time of the physician's visit. It may be his own home, the home of a friend, a hotel, or any other place the person may be staying (except as an overnight patient in a hospital).
2. Office is defined as the office of a physician in private practice only. This may be an office in the physician's home, an individual office in an office building, or a suite of offices occupied by several physicians. For purposes of this survey, physicians connected with prepayment group practice plans are considered to be in private practice.

3. Hospital clinic is defined as an outpatient clinic in any hospital.
4. Company or industry health unit refers to treatment received from a physician or under a physician's supervision at a place of business (e.g., factory, store, office building). This includes emergency or first-aid rooms located in such places if treatment was received there from a physician or trained nurse.
5. Telephone contact refers to advice given in a telephone call directly by the physician or transmitted through the nurse.
6. Other refers to advice or treatment received from a physician or under a physician's general supervision at a school, at an insurance office, at a health department clinic, or any other place at which a physician consultation might take place.

Dental Care Terms

Dental visit.—Each visit to a dentist's office for treatment or advice is considered to be a dental visit. The visit may involve services provided directly by the dentist or by a dental hygienist acting under a dentist's supervision. Services provided while a person was a patient in a hospital for overnight or longer are not considered to be dental visits.

Terms Relating to Hospitalization

Hospital episode.—A hospital episode is any continuous period of stay of one or more nights in a hospital as an inpatient, except the period of stay of a well, newborn infant. In statistics from the Hawaii Health Survey, a hospital is defined as any institution meeting one of the following criteria: (1) named in the listing of hospitals in the 1956 or 1957 Guide Issue of Hospitals, the Journal of the American Hospital Association; (2) named in the listing of hospitals in the 1957 or 1958 Directory of the American Osteopathic Hospital Association; or (3) name of the institution unknown but believed by the respondent to be a hospital.

Hospital admission.—A hospital admission is a hospital episode that began during a specified period of time. (See definition of "Hospital episode.") A hospital admission is recorded whenever a present member of the household is reported to have been admitted to a hospital in the 12-month period prior to the interview week.

Hospital discharge.—A hospital discharge is a hospital episode that ended during a specified period of time. (See definition of "Hospital episode.")

A hospital discharge is recorded whenever a present member of the household is reported to have been discharged from a hospital in the 12-month period prior to the interview week.

Hospital day.—A hospital day is a day in which a person is confined to a hospital. The day is counted as a hospital day only if the patient stays overnight. Thus, a patient who enters the hospital on Monday afternoon and leaves Wednesday noon is considered to have had two hospital days.

Estimates of the total number of hospital days are derived by summing the days for all hospital episodes of a particular type. (See definition of "Hospital episode.") For example, the number of hospital days may be summed for all hospital discharges. (See definition of "Hospital discharge.")

The hospital days per year is the total number of days for all hospital episodes in the 12-month period prior to the interview week. For the purposes of this estimate episodes overlapping the beginning or end of the 12-month period are subdivided so that only those days falling within the period are included.

Length of hospital stay.—The length of hospital stay is the duration in days, exclusive of the day of discharge, of a hospital discharge. (See definition of "Hospital discharge.")

Average length of stay.—The average length of stay per discharged patient is computed by dividing the total number of days for a specified group by the total number of discharges for the same group.

Hospitalized condition.—A hospitalized condition is a condition responsible for a hospital episode. (See definition of "Hospital episode.") If there is more than one hospitalized condition for any one episode, only that one believed to be chiefly responsible for the stay in the hospital is tabulated. If a person enters a hospital for diagnostic tests, or for an operation, the condition that made the tests or operation necessary is considered to be the hospitalized condition.

Normal delivery in a hospital is included as a hospitalized condition but care of the well, newborn infant is not.

Surgical operation.—A surgical operation includes any cutting or piercing of the skin or other tissue, stitching of cuts or wounds, and setting of fractures and dislocations. Deliveries are counted as operations. Injections and transfusions, however, are not included, nor are routine circumcisions.

Only operations performed in hospitals upon inpatients are included.

Operations are classified by type according to a condensed version of "Classification Codes for Surgical Operations and Procedures," published by the Bureau of Medical Services, Public Health Service, Department of Health, Education, and Welfare, September 1954.

Hospital ownership.—Hospital ownership is a classification of hospitals according to the type of organization that controls and operates the hospital. The category to which an individual hospital is assigned and the definition of these categories follows the usage of the American Hospital Association.

Type of hospital service.—Type of hospital service is a classification of hospitals according to the predominant type of cases for which they provide care. The category to which an individual hospital is assigned and the definition of these categories follows the usage of the American Hospital Association.

Short-stay hospital.—A short-stay hospital is one for which the type of service is: general; maternity; eye, ear, nose, and throat; osteopathic hospital; or hospital department of an institution.

Insurance-covered hospitalization.—An insurance-covered hospitalization is an inpatient hospital episode that was completed during the year prior to the week of interview (hospital discharge) and for which the hospital costs were paid in whole or in part by insurance. For the purpose of this survey insurance includes any insurance or formal plan expressly designed to cover or include payment of the costs of care or services provided by the hospital, and for which the premium or cost of the insurance or plan is carried by the hospitalized person, his family, employer, or organization or group of which he is a member. Excluded are Medicare, care provided free of charge in veteran hospitals, care through welfare programs, or other free care.

Nursing Care Terms

Nursing Care in this survey is family help or nursing care provided part time or full time in the person's own home either by members of the household, other relatives, friends, persons hired for the service, or by charitable or public agencies. Usual care required by infants is not included as nursing care.

Constant nursing care means the person could not be left alone, in that someone must always be in attendance or within call.

Part-time nursing care means that the person could not get along without help during certain times or with certain activities, such as dressing, eating, or getting into a chair.

Duration of nursing care is the number of months or years that the person has required continuing nursing care irrespective of whether on a constant or part-time basis.

Person providing care.—A "household member" providing help or nursing care is a person who is a member of the interviewed household. "Other relative" is a related person living outside of the household. "Trained nurse" is a private registered nurse, public health nurse, or visiting nurse. If a trained nurse who is a member of the household provides the care it is recorded as "trained nurse" rather than household member. "Practical nurse" includes persons called a nurse by the respondent but not stated to be a "trained nurse." "Other" includes friends and also persons employed only to sit with the person requiring care.

Terms Relating to Special Aids

Special aids included in this survey are specific types of devices; hearing aids, artificial arms or legs, braces, and wheel chairs. Information was recorded about these aids even though persons possessing them did not use them.

Type of special aid.—A "hearing aid" is any kind of mechanical or electrical device to improve hearing. An "artificial arm or leg" does not have to have moving parts, but a device employed only for lengthening a leg where no amputation was involved is not included in this category. A "brace" is any kind of supportive device for the arms, legs, neck, or back, exclusive of temporary casts, slings, or splints. Braces for the teeth were not included. "Wheel chair" includes any device stated to be a wheel chair, but does not include wheeled "walkers" or nonwheeled devices for support.

Use of special aid.—The frequency of use of a special aid was recorded as reported by the respondent in terms of "all of the time," "most of the time," "occasionally," "or never used now." When necessary, it was explained that these terms referred to the times when a person possessing such a device would ordinarily be expected to use it, such as during the waking hours and under the circumstances that would normally require it.

APPENDIX III

QUESTIONNAIRE

The items below show the exact content and wording of the questionnaire used in the household survey. The actual questionnaire is designed for a household as a unit and includes additional spaces for reports on more than one person.

CONFIDENTIAL: The National Health Survey is authorized by Public Law 652 of the 84th Congress (70 Stat 489; 42 U.S.C. 305). All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey, and will not be disclosed or released to others for any other purposes (22 FR 1687).

Form NNS-2-N (6-16-58)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
Acting as Collecting Agent for the
U.S. PUBLIC HEALTH SERVICE
In cooperation with
the Hawaii Department of Health

NATIONAL HEALTH SURVEY

1. Questionnaire _____ of _____ Questionnaires

2. (a) Address or description of location

3. Iden. Code	4. Sub-sample weight	5. Sample	6. PSU Number	7. Segment No.	8. Serial No.

9. Is this house on a farm or plantation? ☐ Yes ☐ No

(b) Type of living quarters: ☐ Dwelling unit ☐ Other

(c) Name of Special Dwelling Place | Code

10. What is the telephone number here? ☐ No phone

11. What is the best time to call?

12. Are there any other living quarters, occupied or vacant, in this building (apartment)? ☐ Yes ☐ No

14. Does anyone else living in this building use YOUR ENTRANCE to get to his living quarters? ☐ Yes ☐ No

Ask at all units except apartment houses

13. Is there any other building on this property for people to live in - either occupied or vacant? ☐ Yes ☐ No

INSTRUCTIONS

If "Yes" to questions 12, 13 or 14 apply definition of a dwelling unit to determine whether one or more additional questionnaires should be filled and whether the listing is to be corrected.

15. RECORD OF CALLS AT HOUSEHOLDS

Item		1	Com.	2	Com.	3	Com.	4	Com.	5	Com.
Entire household	Date										
	Time										
Callbacks for individual respondents	Col. No. ____ Date										
	Time										

16. REASON FOR NON-INTERVIEW

TYPE:	A	B	C	Z
Reason:	☐ Refusal ☐ No one at home-repeated calls ☐ Temporarily absent ☐ Other (Specify)	☐ Vacant - non-seasonal ☐ Vacant - seasonal ☐ Usual residence elsewhere ☐ Armed Forces ☐ Other (Specify)	☐ Demolished ☐ In sample by mistake ☐ Eliminated in sub-sample ☐ Other (Specify)	Interview not obtained for: Cols. _____ _____ _____ _____ _____ because:

Comments on non-interview

17. Signature of Interviewer | 18. Code

Special instructions or notes

1. (a) What is the name of the head of this household? (Enter name in first column) (b) What are the names of all other persons who live here? (List all persons who usually live here, and all persons staying here who have no usual place of residence elsewhere. List these persons in the prescribed order.) (c) Do any (other) lodgers or roomers live here? ☐ No ☐ Yes (List) → (d) Is there anyone else who lives here who is now away on business? On a visit? Temporarily in a hospital? ☐ No ☐ Yes (List) → (e) Is there anyone else staying here now? ☐ No ☐ Yes (List) → (f) Do any of these people have a home elsewhere? ☐ No (leave on questionnaire) ☐ Yes (If not a household member, delete)	Last name (2) First name and initial
2. Now are you related to the head of the household? (Enter relationship to head, for example: head, wife, daughter, grandson, mother-in-law, partner, lodger, lodger's wife, etc.)	Relationship
3. How old were you on your last birthday?	Age ☐ Under 1 year
4. (a) What race are you -- Caucasian, Japanese or something else? If "Caucasian" or "Japanese", ask: (b) Is there any mixture of any other race?	☐ Caucasian ☐ Japanese ☐ Other ☐ Yes ☐ No
5. Sex (Check one box for each person)	☐ Male ☐ Female
6. Where were you born? (Record State of U.S. or foreign country)	(State of U.S. or foreign country)
If 14 years old or over, ask: 7. Are you now married, widowed, divorced, separated or never married? (Check one box for each person)	☐ Under 14 years ☐ Married ☐ Divorced ☐ Widowed ☐ Separated ☐ Never married
If 14 years old or over, ask: 8. What is the highest grade you completed in school? (Circle highest grade completed or check "None")	☐ Under 14 years Elem: 1 2 3 4 5 6 7 8 High: 1 2 3 4 College: 1 2 3 4 5 + ☐ None

If Male and 14 years old or over, ask.

9. (a) Did you ever serve in the Armed Forces of the United States?
If "Yes," ask:
(b) Are you now in the Armed Forces, not counting the reserves?
If "Yes," delete this person from questionnaire →
(c) Was any of your service during a war or was it peace-time only?
If "War," ask
(d) During which war did you serve?
If "Peace-time" only, ask:
(e) Was any of your service between June 27, 1950 and January 31, 1955?

☐ Fem. or und. 14 yrs. ☐ Yes ☐ No
☐ Yes ☐ No
☐ War ☐ Peace-time only
☐ Spanish American ☐ WW-II ☐ WW-I ☐ Korean
☐ Yes ☐ No

If 6 years old or over, ask

10. (a) What were you doing most of the past 12 months --
(For males over 16): working, looking for work, or doing something else?
(For females over 16): working, looking for work, keeping house, or doing something else?
(For children 6-16): going to school or doing something else?
If "Something else" checked, and person is 50 years old or over, ask
(b) Are you retired?

☐ Under 6 years
☐ Working
☐ Looking for work
☐ Keeping house
☐ Going to school
☐ Something else
☐ Yes ☐ No

R Interview each adult person for himself for questions 11-26 and Tables I, II, and A, if he is at home. Enter column number of respondent in each column.

☐ Responded for self
Col. No. ____ was respondent

We are interested in all kinds of illness, whether serious or not --

11. Were you sick at any time LAST WEEK OR THE WEEK BEFORE? ☐ Yes ☐ No
(a) What was the matter?
(b) Anything else?

12. Last week or the week before did you have any accidents or injuries, either at home or away from home? ☐ Yes ☐ No
(a) What were they?
(b) Anything else?

13. Did you feel any ill effects last week or the week before from an accident or injury that happened before that time? ☐ Yes ☐ No
(a) What were these effects?
(b) Anything else?

14. Last week or the week before did you take any medicine or treatment for any condition (besides . . . which you told me about)? ☐ Yes ☐ No
(a) For what conditions?
(b) Anything else?

15. AT THE PRESENT TIME do you have any ailments or conditions that have lasted for a long time? (If "No") Even though they don't bother you all the time? ☐ Yes ☐ No
(a) What are they?
(b) Anything else?

Table I - ILLNESSES, IMPAIRMENTS AND ACCIDENTS

Line number	(a) Col. No. of person	(b) Question No.	(c) Did you ever talk to a doctor about . . . ?	(d-1) What did the doctor say it was? --did he use any medical terms? (If doctor not talked to - "No" in col. (c) - record respondent's description) (If ill-effects of earlier accident, record ill effects and also fill Table A) For an accident or injury occurring during past 2 weeks, ask: What part of the body was hurt? What kind of injury was it? Anything else? (Also, fill Table A)	(d-2) If an impairment or symptom or a condition from q. 13 or q. 17, ask: What was the cause of. . .? (If accident or injury, also fill Table A)	(d-3) If eye trouble of any kind and 6 yrs. old or over, ask: Can you read ordinary newspaper print with glasses?	(d-4) What kind of. . .trouble is it? Ask only for: allergy, asthma, anemia, rheumatism, arthritis, stroke, tumor (or cysts) OR Any entry in col. (d-1) or (d-2) of: trouble, condition, disease, coupled with seeing or hearing; a part of the body; "mental" or any internal organ	(d-5) What part of the body is affected? Show in following detail for members listed below: Head - (Skull, scalp or face) Spine - (Upper, middle or lower) back Arm - (Shoulder, upper, elbow, lower, wrist, hand) Leg - (Hip, upper, knee, lower, ankle, foot) ALSO If arm, leg, eye, or ear, state whether ONE or BOTH.	LAST WEEK OR THE WEEK BEFORE did . . . cause you to cut down on your usual activities for as much as a day? (e) Check one: No (Go to Col. (h))	(f) Yes →	(g) How many days, including the 2 weekends?
1			☐ Yes ☐ No		X	☐ Yes ☐ No	X	X			Days

Table II - HOSPITALIZATION DURING PAST 12 MONTHS

Line number	(a) Col. No. of person	(b) Question No.	(c) When did you enter the hospital? (Month, Year)	(d) How many days were you in the hospital, not counting the day you left?	To Interviewer: (e) How many of these -- days were in the past 12 months?	(f) How many of these -- days were in the past 2 weeks?	(g) Was this person still in the hospital on Sunday night?	(h) What did they say at the hospital the condition was -- did they use any medical terms? (If "they" didn't say, ask): What did the last doctor you talked to say it was? (Show same detail as in cols. (d-1)-(d-5) of T.I) (If condition from accident or injury, fill TableA)	(i) Were any operations performed on you during this stay at the hospital? If "Yes" (a) What was the name of the operation? (b) Any other operations?
1			Mo: ____ Yr: ____	____ Days	☐ All or ____ Days	____ Days	☐ Yes ☐ No		☐ Yes ☐ No

TABLE A (Accidents and Injuries)

Line No. from Table I ____

1. What part of the body was hurt? What kind of injury was it? Anything else? ☐ Accident happened during past 2 weeks

2. When did it happen? Year ____ (Enter month also if the year is 1957 or 1958) Month ____ ☐ Accident happened during past 2 weeks

3. Where did the accident happen? ☐ At home (inside or outside the house) (own home or someone else's) ☐ While in Armed Services ☐ Some other place

4. Was a car, truck, bus or other motor vehicle involved in the accident in any way? ☐ Yes ☐ No

5. Were you at work at your job or business when the accident happened? ☐ Yes ☐ No ☐ Under 14 years at time of accident

16. Has anyone in the family - you, your--, etc. -had any of these conditions DURING THE PAST 12 MONTHS? (Read Card A, condition by condition; record any conditions mentioned in the column for the person)	☐ Yes ☐ No
17. Does anyone in the family have any of these conditions? (Read Card B, condition by condition; record any conditions mentioned in the column for the person)	☐ Yes ☐ No
18. (a) LAST WEEK OR THE WEEK BEFORE did anyone in the family - you, your--, etc.-talk to a doctor or go to a doctor's office or clinic? Anyone else? If "Yes" (b) How many times during the past 2 weeks?	☐ Yes ☐ No _____ No. of times
(c) Where did you talk to the doctor? (d) How many times at -- (home, office, clinic, etc.)? (Record total number of times for each type of place) ("Hospital clinic" excludes overnight stays)	Place / Times At home _____ At office _____ Hospital clinic _____ Company or industry _____ Over telephone _____ Other (Specify) _____
19. (a) Last week or the week before did anyone in the family go to a dentist? Anyone else? If "Yes" (b) How many times during the past 2 weeks?	☐ Yes ☐ No _____ No. of times
20. How many times altogether in the past 12 months did you go to a dentist?	☐ One ☐ Three ☐ Two ☐ Four or more ☐ None
21. (a) DURING THE PAST 12 MONTHS has anyone in the family been a patient in a hospital overnight or longer? If "Yes" (b) How many times were you in the hospital?	☐ Yes (Table II) ☐ No _____ No. of times
22. (a) During the past 12 months has anyone in the family been a patient in a nursing home or sanitorium? If "Yes" (b) How many times were you in a nursing home or sanitorium?	☐ Yes (Table II) ☐ No _____ No. of times

25. During the past 12 months in which group did the total income of your family fall, that is, your's, your--'s, etc.? (Show Card H) Include income from all sources, such as wages, salaries, rents from property, pensions, help from relatives, etc.	Group No.

Table I - ILLNESSES, IMPAIRMENTS AND ACCIDENTS

How many of these -- days were you in bed all or most of the day?	If 6 years old or over, ask:		Did you first notice . . . DURING THE PAST 3 MONTHS or before that time?			To Interviewer:	Did you first notice . . . DURING THE PAST 12 MONTHS or before that time?	How long since you last talked to a doctor about . . . ?	Do you still take any medicine or treatment that the doctor prescribed for . . . ?	About how many days during the past 12 months, has . . . kept you in bed for all or most of the day?	Ask after completing last condition for each person:				Line number
	Last week or the week before would you have been working at a job or business except for . . . ? (If 6-16 yrs., ask, ("going to school")	If "Yes" in col. (i): How many days did . . . keep you from work (going to school)?	Check one: Before 3 months (Go to col. (n))	Check one: During 3 months →	Did . . . start during the past 2 weeks or before that time? (If during past 2 weeks, ask): Which week, last week or the week before?	If col. (k) is checked, at the condition is an either one of Cards A or B, continue; otherwise STOP	(If during past 12 months, ask): Which month?	(If less than one month, enter "Und. 1" for "Mo.")	Dr. follow any advice he gave?		Please look at this card and read each statement. Then tell me which statement fits you best. (Show Cards C-F, as appropriate)	If 1, 2 or 3 in col. (r): Is this because of any of the conditions you have told me about?	If "Yes" in col. (s) Which? (Enter X on line for each condition named)	If "1," or "2" or "3" in col. (r) ask: Please look at this card and read each statement. Then tell me which statement fits you best. (Show Card G)	
(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)		
____ Days or ☐ None	☐ Yes ☐ No	____ Days or ☐ None			☐ Last week ☐ Week before ☐ Before 2 wks.		Mo. _____ Yr. _____ ☐ Before ☐ Birth	____ Mos. ____ Yrs. ☐ No Dr.	☐ Yes ☐ No ☐ No Dr.	____ Days or ☐ None		☐ Yes ☐ No			I

Table II - HOSPITALIZATION DURING PAST 12 MONTHS

What is the name and address of the hospital you were in? (Enter name, city or county and State)	For completed hospitalizations only: Was any of the hospital bill paid for by any kind of insurance?	If "No" to col. (k), ask: Or, by any kind of plan that pays for hospital costs?	If "No" to both cols. (k) and (l) Do you expect any of the hospital bill to be paid for by insurance or any plan of this kind?	What part of the hospital bill was (will be) taken care of by insurance?	Who carries the cost of this insurance--that is, who pays the premium?	Line number
(i)	(k)	(l)	(m)	(n)	(o)	
	☐ Yes (Skip to col. n) ☐ No	☐ Yes (Skip to col. n) ☐ No	☐ Yes ☐ No (Stop)	☐ Under ½ ☐ ½ up to ¾ ☐ ¾ or more	☐ Family member(s) ☐ Employer ☐ Union, clubs, etc. ☐ Other (Specify) _____	

FOOTNOTES AND COMMENTS

Card A

NATIONAL HEALTH SURVEY

Check List of Chronic Conditions

1. Asthma or hay fever
2. Tuberculosis
3. Chronic bronchitis
4. Repeated attacks of sinus trouble
5. Rheumatic fever
6. Hardening of the arteries
7. High blood pressure
8. Heart trouble
9. Stroke
10. Trouble with varicose veins
11. Hemorrhoids or piles
12. Chronic gallbladder or liver trouble
13. Stomach ulcer
14. Any other chronic stomach trouble
15. Kidney stones or chronic kidney trouble
16. Arthritis or rheumatism
17. Prostate trouble
18. Diabetes
19. Thyroid trouble or goiter
20. Any allergy
21. Epilepsy
22. Mental or nervous trouble
23. Tumor or cancer, cyst or growth
24. Chronic skin trouble
25. Hernia or rupture

Card B

NATIONAL HEALTH SURVEY

Check List of Selected Impairments

1. Deafness or serious trouble with hearing
2. Serious trouble with seeing, even with glasses
3. Condition present since birth, such as cleft palate or club foot
4. Stammering or other trouble with speech
5. Missing fingers, hand, or arm
6. Missing toes, foot, or leg
7. Cerebral palsy
8. Paralysis of any kind
9. Repeated trouble with back or spine
10. Any permanent stiffness or deformity of the foot, leg, fingers, arm, or back

Card C

NATIONAL HEALTH SURVEY

For:

Workers and other persons except Housewives and Children

1. Cannot work at all at present.
2. Can work but limited in amount or kind of work.
3. Can work but limited in kind or amount of outside activities.
4. Not limited in any of these ways.

Card D

NATIONAL HEALTH SURVEY

For: Housewife

1. Cannot keep house at all at present.
2. Can keep house but limited in amount or kind of housework.
3. Can keep house but limited in outside activities.
4. Not limited in any of these ways.

Card E

NATIONAL HEALTH SURVEY

For:

Children from 6 years old and others going to school

1. Cannot go to school at all at present time.
2. Can go to school but limited to certain types of schools or in school attendance.
3. Can go to school but limited in other activities.
4. Not limited in any of these ways.

Card F

NATIONAL HEALTH SURVEY

For: Children under 6 years old

1. Cannot take part at all in ordinary play with other children.
2. Can play with other children but limited in amount or kind of play.
4. Not limited in any of these ways.

Card G

NATIONAL HEALTH SURVEY

1. Confined to the house all the time, except in emergencies.
2. Can go outside but need the help of another person in getting around outside.
3. Can go outside alone but have trouble in getting around freely.
4. Not limited in any of these ways.

Card H

NATIONAL HEALTH SURVEY

Family income during past 12 months

1. Under $500 (including loss)
2. $500 - $999
3. $1,000 - $1,999
4. $2,000 - $2,999
5. $3,000 - $3,999
6. $4,000 - $4,999
7. $5,000 - $6,999
8. $7,000 - $9,999
9. $10,000 and over

APPENDIX IV

CONTRIBUTORS TO THE HAWAII HEALTH SURVEY

The Hawaii Health Survey Advisory Committee was organized primarily for the purpose of providing a means of interchange of information between the sponsoring agencies and the community. Members of the committee were active in promoting community support of the project, in obtaining publicity which contributed to the exceptionally good response rate, and in raising local funds. Listed below are the members of the committee and the organizations which they represented.

Mrs. John Wm. Devereux, Chairman
Oahu Health Council

Charles G. Bennett
State Department of Health

Homer R. Benson, M.D.
Honolulu County Medical Society

Leo Bernstein, M.D.
Representing Governor William F. Quinn

David Bowers
State Tuberculosis and Health Association

George Cannon
Chamber of Commerce

W. Harold Civin, M.D.
Queen's Hospital

William O. Cogswell
Hawaii Visitors Bureau

Charles Congdon
Hawaii Chapter, American Statistical Association

Miss Louise Crute
American Red Cross

Bernard W. D. Fong, M.D.
Hawaii Heart Association

Andrew Gerakas
State Economic Planning and Coordination Authority

Royce E. Higa
Oahu Health Council

George W. Hirsch
Council of Veteran's Affairs

David Katsuki, M.D.
Honolulu City and County Health Department

Gilbert Kurosu
Hawaii Pharmaceutical Society

Richard K. C. Lee, M.D.
Representing State Civil Defense Agency

Andrew Lind
Department of Sociology
University of Hawaii

Lee Maice
Hawaii Housing Authority

Charles MacNamara
Oahu Tuberculosis and Health Association

John Martelon
Hawaii Committee on Alcoholism

Mrs. Mapuana McComas
Oahu Society for Crippled Children and Adults

Mrs. Mabel McConnell
National Association of Social Workers

Mrs. Marjorie MacQueen
Hawaii Cancer Society

Miss Mary Noonan
State Department of Social Services

James O'Brien
Hawaii Association to Help Retarded Children

Linus Pauling, Jr., M.D.
Hawaii Mental Health Association

Mrs. George Patterson
Honolulu Chapter, National Foundation

George Patterson
Rehabilitation Center of Hawaii

Tate Robinson
State Department of Education

Kuniji Sagara
Vocational Rehabilitation
State Department of Education

J. R. Veltmann
Hawaii Medical Service Association

Joseph Woo
Honolulu Redevelopment Agency

Riley Yee
Oahu Tuberculosis and Health Association

Without local financial support, the Hawaii Health Survey could not have been conducted. Funds obtained from Hawaii were used in Hawaii to pay largely for interviewing and other field costs. Although many of the financial supporters were not health agencies, contributions were made because of the understanding that the health of the people is perhaps the most important asset of a community.

The organizations below contributed to the accumulation of knowledge about the health of the people—knowledge which will be used in progress toward health improvement.

Ala Koa Apartment-Hotel, Ltd.
State Department of Health
Foremost Dairies
Frear Eleemosynary Trust
Hawaii Cancer Society
Hawaii Heart Association
Hawaii Housing Authority
Hawaii Public Health Association
Hawaiian Electric Company
Hawaiian Telephone Company
Home Insurance Company of Hawaii, Ltd.
Honolulu Dairymen's Association
Honolulu Paper Company
James and Sally Zukerkorn Foundation
Juliette M. Atherton Trust
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Mental Health Association of Hawaii
Honolulu Chapter, The National Foundation
Oahu Civil Defense Agency
Oahu Society for Crippled Children and Adults
Oahu Tuberculosis and Health Association
Public Health Committee of the Honolulu Chamber of Commerce
Samuel N. and Mary Castle Foundation
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